IMMUNOHISTOCHEMICAL PROFILE OF EPITHELIAL TUMORS IN A TERTIARY CARE HOSPITAL

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Dedicated

to

my Family

&

Teachers

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LIST OF ABBREVIATIONS

ADC:	Adenocarcinoma
AFP:	Alphafeto protein
AMACR:	Alpha-methylacyl-CoA
CC:	Cholangiocarcinoma
CD:	Cluster of Differestiation
CDX2:	Caudal type homeobox 2
CEA:	Carcinoembryonic antigen
CK:	Cytokeratin
CUP:	Carcinoma of unknown primary
EMA:	Epithelial membrane antigen
ER:	Estrogen receptor
GATA3:	GATA binding protein 3
GIT:	Gastrointestinal tract
GPC3:	Glypican 3
H&E:	Haematoxylin and Eosin
HCC:	Hepatocellular carcinoma
HMWCK:	High molecular weight cytokeratin
IHC:	Immunohistochemistry
MA:	Metastatic adenocarcinoma
NSE:	Neuron specific enolase
PAX8:	Paired box gene 8
PR:	Progesterone receptor
PSA:	Prostatic specific antigen
PSAP:	Prostate specific acid phosphatase

RCC:	Renal cell carcinoma
SATB2:	Special AT-rich sequence-binding protein 2
SCC:	Squamous cell carcinoma
TP53:	Tumor protein 53
TTF1:	Thyroid transcription factor 1
UC:	Urothelial carcinoma
UP:	Uroplakin
WT1:	Wilms tumor protein 1

ABSTRACT

Introduction: IHC is a widely used technique in diagnostics and research and its application continue to extend because of its ease to use, reliability and versatility. Advantage of this is visible morphology of tissue around the specific antigen by counter staining.

Aim of study: To study IHC profile of various epithelial tumors of the body and metastatic carcinomatous deposits.

Materials and methods: The present 30 months study (January 2018 to June 2020) to analyse the immunohistochemical profile of epithelial tumors was conducted in the Department of Pathology Dayanand Medical College Ludhiana. A total of 302 cases of carcinomas on which IHC was done were analysed. All the cases with immunohistochemical work up were analysed with respect to the histomorphological features favouring that of carcinoma.

Results: There were a total of 302 cases on which immunohistochemistry was performed, out of which 66% of total cases were primary carcinomas and secondary carcinomas (metastatic carcinomatous deposits) constituted 34% of the total cases. Extranodal metastatic carcinomatous deposits comprised 81.2% of total secondary carcinomas. Lung carcinomas was the predominant site (28.8%) of primary carcinomas followed by female genital tract (26.9%), gastrointestinal tract (20.9%), male genital tract (7.5%), pancreas (7.0%), urinary system (6.4%), Liver (4.5%), Head and neck region (3.0%)

Conclusion: There have been major advances in our insight into the carcinoma and how they should best be treated over the past years. Wise utilization of panel of antibodies in the light of morphological features of carcinoma has helped in characterizing the subtype in the majority of the carcinomas.

Keywords: Immunohistochemistry, Epithelial tumors, Metastasis

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INTRODUCTION

Immunohistochemistry (IHC) technique is widely used in diagnostics and research, and its applications continue to be extended because of its ease of use, reliability, and versatality. IHC has advantage of visible morphology of the tissue around the specific antigen by counterstaining, e.g., with haematoxylin (blue) compared to other techniques. Results of stained IHC markers are reported semi quantitatively and have important diagnostic and prognostic implications, particularly for epithelial tumors, lymphoma, and the detection of infectious microorganisms.

Nowadays IHC is used as a routine and essential tool in diagnostic and research laboratories, and is used in a wide range of applications.

Immunohistochemistry is carried out by exploiting the principle that antibodies bind specifically to an antigen in the biological tissues. The antigen-antibody interactions can be visualized by a marker including fluorescent dyes, enzyme-substrate colour reactions or colloidal gold. With progress in biotechnology, researchers have been making significant improvements in protein conjugation, tissue fixation techniques, detection labels and microscopy.

The impact of diagnostic immunohistochemistry for surgical pathologist is legendry, it is best appreciated in studying malignancies of unknown primary sites. This study is done to determine the immunohistochemistry of metastatic carcinomas of unknown primary site and to determine the site of origin.[1] There are a number of factors that play strong role in predicting the origin of a metastatic malignancy. History of previous malignancy, patient sex, any history of smoking, family history, site of disease presentation, and radiographic findings are few of the factors that can strongly predict the primary site of malignancy before and IHC is performed. Approximately 3%-5% of new malignant diagnoses are classified as metastatic carcinomatous deposits from unknown primary. They ranks among the 10 most prevalent forms of cancer in both males and females.[2] The most

common sites of involvement includes lymph nodes, liver, bones, and lungs.[3]

The percentages of deaths from non-squamous and non-endocrine carcinomas by sites of origin are approximately as follows: for men, lung (28%), colon (14%), prostate (14%), pancreas (11%), liver (hepatocellular carcinoma and cholangiocarcinoma) (10%), bladder (6%), esophagus (6%), and kidney (5%); for women, lung (28%), breast (22%), colon (13%), pancreas (11%), ovary (8%), uterus (6%) and liver (hepatocellular carcinoma and cholangiocarcinoma (5%). All other carcinomas represent less than 5% of adenocarcinoma related deaths. Thus even relatively sensitive and specific IHC markers for those sites may have difficulty in predicting prospectively the site of origin of a metastasis.[4]

Metastatic tumors do not always have obvious origins, in one third of these cases, the primary tumor can never be found. This study is a guide to the most recent advancement in diagnostic approach to the patient management of these fatal and frequent tumors. Among all the malignancies 3% to 5% remained as carcinoma with unknown primary even after extensive pathological and radiological workup. Identification of primary origin of such neoplasm is very crucial for proper patient management and prognosis.

AIMS & OBJECTIVES

- To study immunohistochemical profile of various epithelial tumors of the body.
- To study the immunohistochemical profile of Metastatic carcinoma of unknown primary site.

REVIEW OF LITERATURE

Immunohistochemistry (IHC) is a method to identify specific antigen within a tissue section utilizing an antigen specific antibody. Detection at the light microscopic level of antigen antibody interaction can be achieved by labelling the antibody with a substance that can be visualized, which can be done either by conjugation to a fluorescent marker or enzyme followed by the colorimetric detection. Immunological detection of antigens dates to the early 20th century when Marrack demonstrated that anti-typhoid and anti-cholera sera labelled with diazotized benzidine-azo-r-salt imparted a red colour to the bacteria. Coons determined this labelling method to be relatively insensitive when applied to the tissues, and subsequently described assays utilizing fluorescent labelled antibodies in fixed tissues, but interpretation was confounded by the enhanced endogenous fluorescent activity in formalin-fixed tissue.[5]

To determine the exact tumor type using standard Haematoxylin and Eosin (H&E) staining of formalin-fixed tissues can be challenging, especially with metastatic and/or poorly differentiated tumors. Successful IHC is dependent on many factors which includes species and tissue type, duration of fixation, quality fresh or frozen sectioning and antibody specificity.

The initial approach of most tumor diagnosis IHC application is distinguishing epithelial from mesenchymal differentiation using markers vimentin and cytokeratin.

Individual markers for proliferation, apoptosis, and specific tumor proteins can be used to help distinguish hyperplasia from neoplasia and determine the specific tumor type. IHC provides a relatively rapid and simple method to determine the origin of neoplastic tissue or investigate the behaviour or progression of a given neoplasm.

The use of positive and negative controls is should be employed in routine IHC. “Is brown good enough?”. The answer to this question is unequivocally no. The importance of positive and negative controls cannot be overstated. Negative control confirms that the staining being

reported is due to the antibody binding, and the positive control confirms that the antibody is working and that the suspected target of the antibody is the actual target. Internal controls in normal tissues on the stained slide are known to be either positive or negative for the marker in question, are excellent confirmatory evidence.[6]

Immunohistochemical markers are monoclonal antibodies used to identify specific protein in the tissue section. The antibody binds to protein being assessed and a colour reagent stains the protein, if that protein is present in the tissue. So identification of differentiation proteins is required for the tumors that cannot be readily classified on routine sections alone.[7]

The first immunohistochemistry procedure was performed in 1941 when Coons et al used fluorescent antibody to detect bacterias in tissue. This had success led to development of similar tests which helped in the diagnosis of autoimmune disease. By the 1960s, many research laboratories made and used these fluorescent antibodies to detect a number of tissue antigens. Earlier procedures were applied only to the unfixed or frozen tissue, rather than fixed tissue, resulting in poor morphology. These drawbacks, combined with interference by tissue auto fluorescence, fading of the fluorescent label led to the development of new methods. Investigators tried to label antibodies by using metal storage proteins such as ferritin and a enzymes such as acid phosphatase.[8]

In 1960 Nakano and Pierce succeeded in labelling an antibody with horseradish peroxidase, which is a inexpensive and readily available enzyme that could be easily detected using the permanent substrate 3,3-diaminobenzidine (DAB).

In 1970, Sternberger and colleagues used the enzymatic histochemical method to detect antibody using peroxidase antiperoxidase (PAP) and DAB. In this procedure, the primary antibody was not labelled with horseradish peroxidase. This method called for inserting the secondary antibody after a primary one, then adding PAP and DAB substrate. The end product of this reaction was a brown precipitate that could be seen

under a bright-field microscope. This approach was known as the PAP technique. With the publication of the this technique came a race to better understand and take advantage of immunohistochemistry technology.

By the mid-1980s, DAB substrates and enzyme-labelled methods were widely used.

By the 1990s, however, the potential use of immunohistochemistry in surgical pathology became apparent, but the focus shifted to applying immunohistochemistry to formalin-fixed tissues.

Huang and his co-workers used a proteolytic enzyme (trypsin) to make available antigen sites that were masked by the fixative. Although their work involved indirect immunofluorescence methods. With this enzymes such as trypsin, pepsin and protease became common adjunct to the fixed-tissue immunohistochemistry.

In the late 1990s, Guesdon and his colleagues, studied the effects of covalently labelling enzymes, antigens, and antibodies with biotin. They developed the bridge avidin-biotin and the labelled avidin-biotin techniques for detecting antibodies by enzyme immunoassay and enzyme-immunohistochemical staining. The enzymes which were used in labelling experiments included peroxidase, alkaline phosphatase, glucose oxidase, and 3-galactosidase. These sensitive and reproducible methods formed the basis of methods still in use, such as those in the avidin-biotin and labelled strept avidin kits.[9]

Individual immunohistochemical stains used in various carcinomas are as follows-

Cytokeratins are intermediate filaments contain keratin usually found in the intracytoplasmic cytoskeleton of epithelial tissue. The term cytokeratin was derived in the 1970s when the proteins in the intermediate filament were identified. However, the terminology was modified as keratins in new systemic nomenclature in 2006. There are two types of cytokeratins: the low molecular weight or acidic type I

cytokeratins and high molecular weight or basic or neutral type II cytokeratins.[10]

The high-molecular-weight cytokeratins or basic or neutral cytokeratins comprise numerous subtypes, namely CK1, CK2, CK3, CK4, CK5, CK6, CK7, CK8, and CK9. The low-molecular-weight cytokeratins or the acidic cytokeratins comprise CK10, CK12, CK13, CK14, CK16, CK17, CK18, CK19, and CK20. The expression of these cytokeratins varies in different organ and is thus organ specific.

The molecular weight decreases as number advances and thus cytokeratin 1 has the highest molecular weight, while cytokeratin 19 has the lowest molecular weight. The subsets of cytokeratins which an epithelial cell expresses depend on the type of epithelium and the differentiation pattern.

CK7 is type II keratin of simple non keratinizing epithelia; molecular weight 51.4 kDa. Expression is similar to but more limited than keratins 8 and 18 in simple, pseudostratified and ductal epithelium, mesothelium and urothelium. Despite of wide distribution it is useful as part of a panel in determining primary site of metastatic carcinoma. CK7 is expressed (with some variation) in adenocarcinoma of lung, breast, thyroid, endometrium, cervix, ovary, salivary gland, upper GI tract, urothelial carcinoma, papillary renal cell carcinoma and Paget disease. CK7 negative immunoexpression is seen in colorectal carcinoma, Merkel cell carcinoma, hepatocellular carcinoma, prostatic adenocarcinoma, adrenocortical tumors and squamous cell carcinoma.[11]

CK20 is the simple-epithelial keratin with the most restricted expression pattern. Although CK20 is a keratin typically expressed in simple epithelia, it is also found in the lone basally located Merkel cells of the epidermis and outer root sheath of hair follicle. CK20 is a potent immunohistochemical marker in tumor pathology since its peculiar expression spectrum is essentially maintained in the corresponding primary and metastatic carcinomas.[12] It should be noted that the

diagnostic value is increased when the markers CK20 and CK7 are applied in combination. For example, a CK7-/CK20+ phenotype of an adenocarcinoma metastasis strongly favours a colorectal origin.

For metastatic carcinomatous deposits with a CK7+/CK20− pattern, a gastrointestinal origin is diagnosed in 2/3rd of cases (50% colorectal, 20% pancreatic, 10% gallbladder, small intestine and rectum). In the 1/3rd of the remaining cases, more than 50% had an ovarian origin, followed by a lung or breast origin. In only a few cases, it may be difficult to distinguish the primary origin of tumors including mesothelioma.

When dealing with a CK7−/CK20+ metastatic deposits, the first aetiology to be considered is a colorectal origin corresponding most often to a poorly differentiated adenocarcinoma. It is often difficult but important to distinguish between adenocarcinoma of the bladder from a colorectal origin because these two tumors have the same morphological appearance and immunohistochemical profile (CK7−/CK20+/CDX2+), while the therapeutic management is different.

The immunohistochemical profile of a CK7−/CK20+ metastatic deposits should include endocrine markers (Chromogranin, Synaptophysin and CD56) as this profile is unique to Merkel cell carcinomas and small cell carcinomas of salivary glands, both with perinuclear “dot-like” CK20 staining. Therefore, the phenotype of Merkel cell carcinomas is CK7−/CK20+ (“dot-like”), CDX2−, SATB2-, Chromogranin+, Synaptophysin+ and positive for Merkel cell polyomavirus (MCPyV), while the phenotype of small cell carcinomas of the salivary glands is Synaptophin+, Chromogranin+/−, CD56+ and CDX2−.

In the event of malignant epithelial proliferation with a diffuse or focal CK7+/CK20+ profile, the pulmonary origin (mucinous adenocarcinoma ex-bronchioalveolar carcinoma and pulmonary intestinal-type adenocarcinoma), pancreatic, digestive (gastric, oesophageal, small intestine), ovarian (mucinous sub-type) and sometimes bladder or midline origin should be excluded . This pattern of CK7+/CK20+ also

allows the exclusion of breast (CK7+/CK20−), colon (CK7−/CK20+/−), renal (CK7−/CK20−), prostate (CK7+/CK20−), hepatic (CK7−/CK20−), thyroid (CK7+/CK20−) and adrenal (CK7−/CK20−) origins.[13]

When confronted with an adenocarcinoma morphology, the CK7−/CK20− profile excludes a primary pulmonary origin, while prostate, renal, liver or adrenal origins may be proposed.[14]

CK5/6 are intermediate-sized basic keratins. In normal tissue, CK5/6 are mainly expressed in keratinizing (epidermis) and nonkeratinizing (mucosa) squamous epithelium, as well as in basal myoepithelial cell layer of the prostate, breast, and salivary glands.[15]

Keratin/cytokeratin AE1 + AE3 is a **pan cytokeratin** (pan keratin) antibody cocktail that detects cytokeratins 1-8, 10, 14-16 and 19. This cocktail is an optimized mixture of two different monoclonal antibody clones, AE1 and AE3. Each clone detects a subsets of high and low molecular weight cytokeratins: AE1 detects 10, 14-16, and 19; AE3 detects 1-8. A key advantage of the pan cytokeratin stain is that a broader spectrum of cytokeratins can be detected compared to using each clone alone.

The pan cytokeratin antibody cocktail is a well known broad spectrum immunohistochemical epithelial marker for screening for epithelial differentiation in tumors and their metastases of epithelial tumors. Most carcinomas are reported to stain positive, and this antibody helps to confirm or rule out the epithelial nature of a poorly differentiated tumor. Positive pan cytokeratin staining with the antibody in the lymph node or bone marrow is an indication of metastatic carcinoma. This antibody has also been used to identify residual tumor post-treatment and to assess the depth of cancerous invasion.

Negative pan cytokeratin staining patterns suggests non-epithelial components associated with a carcinoma. The staining patterns of pan cytokeratin antibody have been extensively documented in epithelium and numerous tumor types, dating back to 1982 when the clones were first developed.[16]

CDX2 is a nuclear homeobox transcription factor that belongs to the caudal-related family of CDX homeobox genes. CDX2 is crucial for axial patterning of the alimentary tract during embryonic development and is involved in the processes of intestinal cell proliferation, differentiation, adhesion, and apoptosis. CDX2 expression has been reported to be organ specific and is normally expressed throughout embryonic and postnatal life within the nuclei of epithelial cells of the alimentary tract from the proximal duodenum to the distal rectum.[17]

Extensive nuclear staining (>50% of cells) for CDX2 was most commonly seen in colorectal adenocarcinomas (90%). Other adenocarcinomas with extensive nuclear CDX2 staining include gastroesophageal adenocarcinomas (20%), ovarian endometrioid adenocarcinomas (20%) and mucinous adenocarcinomas (20%) and uterine endometrioid adenocarcinoma (4.3%). Neuroendocrine tumors in general exhibit a pattern of CDX2 staining that mirrors the anatomic distribution of CDX2 expression in non-neuroendocrine carcinomas. 89% midgut and 44% hindgut carcinoids show extensive CDX2 biliary tract, and lung showing no or only focal CDX2 expression expression, with carcinoids of the stomach,. The majority of pancreatic islet cell tumors also show no or little staining for CDX2.

Extensive positive CDX2 staining predicts a metastasis from a gastrointestinal carcinoid of midgut or hindgut origin. Negative or focal CDX2 staining predicts a source from the lung, stomach, biliary tract, or pancreas.[18]

Both the CK7-/CK20+ phenotype and expression of the antibody CDX2 are highly specific and sensitive markers of colorectal origin. CDX2 expression should be a useful adjunct for the diagnosis of intestinal adenocarcinomas, particularly when better established markers such as CK7 and CK20 yield equivocal results. The CK7-/CK20+ phenotype is superior in its specificity and positive predictive value and might be preferred.[19]

p63 gene is located on chromosome 3q27-28, is a member of the *p53* gene family. The product is encoded by the p63 gene has been reported to be essential for normal development. p63 expression was restricted to the nucleus. Its expression is restricted to epithelial cells of stratified epithelia, such as skin, esophagus, ectocervix, tonsil, and bladder and to the certain subpopulations of basal cells in glandular structures of prostate and breast, as well as in bronchi. Consistent with the phenotype observed in normal tissues, it was found that p63 is expressed predominantly in basal cell and squamous cell carcinomas, as well as transitional cell carcinomas, but not in adenocarcinomas of breast and prostate. Interestingly, thymomas expressed high levels of p63.[20]

Recently, p63 was identified as a novel myoepithelial marker that is variably expressed in myoepithelial cells. The prognostic value of p63 expression in a malignant tumour is controversial. Some studies have shown that p63 expression is a good prognostic marker for patients with human urothelial carcinoma, but is not an independent prognostic factor for overall survival of esophageal squamous cell carcinoma.[21]

The commonly used markers for distinguishing between lung squamous cell carcinoma (SCC) and adenocarcinoma (ADC) are p63, p40, and cytokeratin (CK5/6) (SCC-specific), and thyroid transcription factor 1 (TTF-1), Napsin A, and CK7 (ADC-specific).

Numerous studies and reliable results have been reported in this field. The progress in lung adenocarcinoma research means that characteristics, including clinical features, radiology, pathological growth types, gene expression, and molecular biomarkers, are used to divide ADC into several subtypes related to prognosis, and guide clinical treatment decisions. However, treatment decisions for lung SCC still mostly depend on anatomy-based TNM staging for two reasons: first, the study of the molecular background of SCC is not as advanced as that of lung ADC; and second, lung SCC is called a “dirty cancer” and the genes involved in this cancer are more complicated

than those involved in lung ADC. p63, p40, and CK5/6 have been widely used as specific markers for lung SCC diagnosis. However, few studies on the relationship between the expression of SCC diagnostic markers and post-surgery survival have been reported.[22]

Paired-box genes 8 (PAX8) encode a family of nine well-characterized paired-box transcription factors (PAX1-9), which are important for embryogenesis and disease. PAX proteins have been implicated as regulators of organogenesis and key factors in maintaining pluripotency of stem cell populations during development. Among these PAX genes, PAX8 had been hypothesized to be crucial in determining the cell fate during development of the thyroid, kidney, brain, eyes and Müllerian system and regulates expression of the Wilms tumor suppressor gene (WT1) .

A number of studies had found that PAX8 is important for the development of various types of tumor. PAX8 was found to be associated with renal tumors. Renal cell carcinomas (RCC) stained positive for PAX8 in 90% of cases studied and 100% of normal kidney samples stained PAX8 positive.[23]

The female reproductive tract originates from fetal Müllerian system and PAX8 is involved in the regulation of the formation of the tract. PAX8 is widely expressed in various types of ovarian tumors, particularly in serous tumors, ovarian endometrioid carcinoma and clear cell carcinoma. The majority of serous ovarian carcinoma cells are considered to originate from the normal secretory cells of the fallopian tube in which PAX8 is highly expressed. Mucinous carcinoma of ovary is distinguished from metastatic cancer of the digestive tract, and cytokeratin CK7 and CK20 are found to perform an important role in the differentiation process.

However, determining PAX8 expression cannot be used to discriminate between benign and malignant ovarian tumors.[24]

WT1 gene, a tumor suppressor gene located at 11p13, is involved in the development of Wilms tumor. The WT1 gene encodes a

transcription factor with four DNA binding zinc fingers at the C terminus. In embryonic life, WT1 plays a critical role in the development of the genitourinary tract, spleen, and mesothelial structures. In normal adult tissue it is expressed in mesothelium, podocytes and mesangial cells of the kidney, sertoli cells of the testis, stromal cells, surface epithelium and granulosa cells of the ovary, and myometrium and endometrial stromal cells of the uterus.

On immunohistochemistry WT1 is detected in the nucleus of tumor cells of Wilms tumor and mesothelioma; therefore, WT1 has traditionally been used as a diagnostic marker for these tumors. Also ovarian serous carcinomas and rhabdomyosarcomas also express WT1.

An appropriate evaluation of WT1 expression in tumor cells is important at present, because WT1 is now regarded as a molecular target of immunotherapy for various malignant tumors. The clinical trial of a WT1 peptide-based cancer immunotherapy is on-going: WT1 vaccination was safe in all cases and clearly effective against several kinds of malignancies.[25]

Thyroid transcription factor-1 (TTF-1) immunoreactivity is considered as a specific marker of lung and thyroid neoplasms, it may be positive in a proportion of extrapulmonary adenocarcinomas.[26] Thyroid transcription factor 1 (TTF-1), is a 38-kDa nuclear protein encoded by a gene located on chromosome 14q13. TTF-1 is the master regulatory transcription factor for tissue-specific genes. In normal lung, TTF-1 plays a decisive role in the maintenance of the functions of terminal respiratory unit cells, where it regulates expression of surfactant protein A, B, and C and Clara cell secretory protein. Although the role of TTF-1 as a lineage marker for terminal respiratory unit cells has been well documented, its role in carcinogenesis remains unclear.

TTF-1 is most commonly used to distinguish primary lung adenocarcinoma from carcinoma metastasized to the lung. TTF-1 has

also been a useful marker in differentiating primary lung adenocarcinoma from pleural mesothelioma. Immunoexpression of TTF-1 has been described in as many as 80% of primary adenocarcinomas, depending on the techniques used. However, the vast majority of squamous cell carcinomas and most extrapulmonary tumors (except for thyroid) lack TTF-1 expression.[27]

p40 is a isoform of p63 and represents the non transactivating domain. It is commonly found in the basal layers of stratified epithelium and some glandular epithelium. p40 has been shown to be superior to the commonly used antibody p63 for squamous differentiation as p63 can be found in some lung ADCs and even large cell lymphomas, making it less specific.[28] The reactivity of p40 nuclear staining in lung squamous cell carcinoma demonstrated 98%–100% specificity, indicating its reliability for diagnosing squamous cell carcinoma. Expression of p63 is similar to that of p40 in lung squamous cell carcinoma, but there was variable p63 immunoreactivity in lung adenocarcinoma.[29]

p40 is important for the accurate diagnosis of basal cells in atypical glandular proliferations of the prostate. It is an isoform of p63, may be an adjunct to a marker panel in this setting. p40 immunoexpression has gained a wide recognition in tumor diagnosis, with special regard to squamous cell and urothelial carcinomas. In the prostate, p40 has been shown to stain basal cells as reliable as p63, with only minor differences.[30]

Napsin A is a functional aspartic proteinase, expressed in the cytoplasm of healthy lung parenchyma. It is involved in maturation of the biologically active surfactant protein B. Napsin A is expressed in type II pneumocytes, alveolar macrophages, renal tubules, and exocrine glands and ducts in the pancreas. Earlier, it was said that Napsin A is expressed in primary lung carcinomas and facilitates the differentiation between primary lung carcinomas and metastatic lesions. Many studies have shown that Napsin A is more sensitive than TTF-1 in distinguishing lung primary from other adenocarcinomas.[31]

Napsin A expression may be seen in other nonpulmonary tumors. Tumors that are primarily implicated as challenging for the differential diagnosis include clear cell renal cell carcinoma and ovarian clear cell carcinoma. Napsin A, when used as a single IHC marker, may be superior to TTF-1 alone or the double IHC stain, TTF-1/napsin A for the diagnosis of lung adenocarcinoma.[32]

Prostate-specific antigen (PSA) is a 33-kDa serine protease that is secreted by prostatic epithelium. Because of its role in detection and prognosis of prostate cancer, PSA remains the only serum biomarker recommended by the American Cancer Society for use in the screening of malignancies. Expression pattern is cytoplasmic on IHC. In addition, PSA expression in tumor tissue is generally successfully applied in the identification of the prostatic origin of metastatic carcinoma and the distinguish poorly differentiated prostatic cancer and urothelial carcinoma in the bladder neck region. This fact should be considered in the differential diagnosis of poorly differentiated carcinoma of the lower urinary tract.[33]

Alpha-methylacyl-CoA-racemase (AMACR) gene product is an enzyme involved in the oxidation of branched-chain fatty acids. AMACR was recently found to be overexpressed in prostate cancer.

The difference between AMACR staining in atrophic cancer and benign atrophy is statistically significant. A positive AMACR immunohistochemical result can be helpful in establishing a diagnosis of limited prostate cancer on needle biopsy, although AMACR positivity must be taken in context of the lesion's histology as both premalignant (high-grade PIN) and some benign mimickers of cancer may express AMACR. Even in the absence of AMACR immunoreactivity, a diagnosis of atrophic prostate cancer can be rendered given the appropriate morphology and the immunohistochemical documentation of an absent basal cell layer.[34]

Positive staining pertains to dark diffuse or granular, cytoplasmic or luminal, but circumferential.[35] AMACR IHC for the detection of

prostate carcinoma on stored needle biopsies is essential. As negative staining for basal cell markers (34bE12/p63), especially in a small focus of atypical glands, is not necessarily diagnostic of prostate cancer, positive staining for AMACR can increase the level of confidence in establishing a definitive malignant diagnosis.[36]

Glypican-3 (GPC3), member of the heparan sulfate proteoglycan family. Glypican-3 (GPC3) was discovered as a potential serological and histochemical marker whose expression is specific for HCC.[37] GPC3 belongs to glypican family that is a group of heparan sulfate proteoglycans linked to the outer surface of cell membrane through a glycosyl phosphatidylinositol anchor. During hepatic carcinogenesis, GPC3 has been reported to reappear in HCC and to be released into serum. Its expression is also detected in melanoma. The functions of GPC3 in cancer cells are still unclear. GPC3 is a reliable diagnostic immunomarker, when positive, to distinguish HCC from benign hepatocellular mass lesions, including hepatocellular adenoma.[38]

RCC is a monoclonal antibody directed against the glycoprotein on the brush border of proximal renal tubular cells. It is positive in almost all low-grade clear cell RCCs and papillary RCCs but is usually negative in chromophobe RCCs, oncocytomas, and collecting duct RCCs. Early studies have shown that RCC marker is relatively specific for carcinoma of renal origin.[39]

In a study conducted at university and veterans affairs medical centre, examples of clear cell renal carcinoma, papillary renal carcinoma, chromophobe renal cell carcinoma, and renal oncocytoma were selected.

The degree of cytoplasmic staining was variable but was never stronger than the surface staining. Interestingly, papillary carcinomas showed strong surface staining with the RCC antibody. In contrast to the clear cell carcinomas and papillary renal cell carcinomas, all 19 of the chromophobe renal cell carcinomas were uniformly negative for

RCC staining. There was no surface membrane or cytoplasmic staining of the chromophobe tumor cells.[40]

GATA3 a binding protein is a transcription factor of the GATA family. These nuclear proteins recognize the G-A-T-A nucleotide sequences in target gene promoters and activate or repress those genes. Expression pattern on IHC is nuclear. Urothelial epithelium of the renal pelvis, ureter, and urinary bladder were strongly positive. In kidney other positive elements included collecting ducts, distal tubules and mesangeal cells. Seminal vesicle epithelium were positive, and prostatic basal cells were variably positive and luminal cells were typically negative. Main diagnostic use is in breast carcinoma, transitional cell carcinoma, tumors of skin adenexa and yolk sac tumor. In the lymphoid tissue of tonsil, only scattered germinal center cells and interfollicular T-cells are positive. Omental peritoneal mesothelium is negative, but positivity is detected in reactive mesothelium.[41]

CD10 the cell-surface glycoprotein expressed in a variety of tissues and malignancies. It is useful in the differential diagnosis of renal cell tumors. For renal carcinomas, the CD10 expression profile is similar to that of RCC marker and almost all clear cell RCCs and papillary RCCs stain positive for CD10, whereas other types of RCCs stain negative. Although still useful in selective situations, the broad expression of CD10 in many other malignant neoplasms limits its use as a confirmatory marker for metastatic RCC.[42]

CD10 is not lineage specific and has been shown to be positive in numerous epithelial, lymphoid, mesenchymal, and melanocytic tumors as well as normal tissues.[43] Expression of CD10 was identified in a wide range of non-haematopoietic neoplasms found positive staining.

In gastric carcinomas, stromal cells CD10 expression correlated with hallmark feature of cancer like invasion and metastasis. In invasive breast cancer, stromal expression of CD10 highlights high grade, estrogen receptor negativity, and poor prognosis and can be used as a predictor of disease outcome.[44]

Uroplakin (UP) is a 15-kDa protein component of the urothelial plaques that enhance the permeability barrier and strength of the urothelium. UPs are expressed in the normal urothelium and are undetectable in nonurothelial tissues. UP showed diffuse membranous and cytoplasmic positivity. They are present at the apical surface and cytoplasm of umbrella cells but absent in the intermediate and basal cells. The diagnosis of well-differentiated urothelial carcinoma (UC) is generally straightforward based on clinical and morphologic characteristics, especially in the presence of noninvasive papillary UC or Carcinoma in situ. Diagnosis of metastatic UCs or invasive poorly differentiated UC lacking a precursor component can be challenging. Currently used immunohistochemical markers for urothelial lineage include p63, high molecular weight cytokeratin, thrombomodulin, GATA3, and placental S-100. Among these, GATA3 has been considered to be the best marker for UC. UP positivity would be of diagnostic utility in supporting a diagnosis of UC in GATA3 positive, poorly differentiated carcinoma involving the lower genitourinary tract or a metastatic site.[45]

SATB2 is a part of the family of matrix attachment region binding transcription factors, and has roles in development of craniofacial, neural, and osteoblastic differentiation. Expression pattern is nuclear. SATB2 has shown to be highly expressed in the epithelium of the lower gastrointestinal tract, with a relatively narrow expression profile in malignancies, including colorectal/appendiceal adenocarcinomas, tumors of osteoblastic differentiation, and renal/urothelial carcinomas. SATB2 had gained interest as a relatively specific for colorectal differentiation, with potential applications including determining origin of adenocarcinomas of unknown primary and distinguishing primary ovarian mucinous carcinomas from colorectal metastases.

The initial identification of SATB2 as a potential marker of colorectal adenocarcinoma and suggested that the combination of SATB2 with CK20 is a highly specific marker for colorectal adenocarcinoma. SATB2 has been shown to be highly expressed in the lower

gastrointestinal tract and adenocarcinomas of colorectal and appendiceal origin, as well as in osteoblasts and tumors of osteoblastic differentiation, and moderately expressed in renal tissues and some renal/urothelial tumors.[46]

Estrogen receptor (ER) plays an important role in the occurrence, development, and prognosis of breast cancer. ER is the main protein that expressed by human breast cancer; as an classical nuclear receptor. ER protein expression is localized in the cell nucleus, and staining of the nucleus is the pathologic diagnostic criteria for positive staining of ER shown by immunohistochemical staining in breast cancer. The critical roles of estrogen receptors signalling in diverse cellular processes and development. Deregulation of ER is involved in tumorigenesis in multiple organ sites, including breast, ovary, endometrium and colon.[47]

β-catenin is a component of WNT signalling pathway. Dysfunction of the WNT signalling pathway is important in colorectal carcinogenesis and results in the nuclear accumulation of β-catenin. Membranous beta-catenin form complexes with E-cadherin, a critical mediator of cell-cell adhesion, and is responsible for the maintenance of cell polarity. The membranous expression of beta-catenin and E-cadherin characterizes the epithelial phenotype whereas the loss of this membranous expression is indicative of switch toward more mesenchymal phenotype. The nuclear translocation of β-catenin induces epithelial mesenchymal transition and pro-invasive gene expression. Therefore, the differential intracellular distribution of β-catenin exerts a marked impact on the phenotype and behaviour of tumor cells.[48]

Carcinoembryonic antigen (CEA), a glycoprotein with a molecular weight of 180–200 kDa. It was initially isolated from fetal colon and colon cancer tissue. Expression pattern is cytoplasmic and membranous. Main diagnostic use is in gastrointestinal and pancreatic adenocarcinoma, pulmonary adenocarcinoma, cholangiocarcinoma

and hepatocellular carcinoma. Monoclonal CEA (mCEA) was strongly positive in most pancreatic ductal adenocarcinomas, and the adjacent stroma also showed positivity because of the leaking of mCEA into the adjacent tissue.[49]

Individual organ has specific IHC markers for primary and secondaries of that organ which are discussed as following-

LUNG

Differentiating primary adenocarcinoma (ADC) and primary squamous cell carcinoma (SCC) of the lung is a main branch point in the category of non-small cell carcinomas. Adenosquamous carcinoma contains features of both and can be difficult to distinguish on a small biopsy. Four immunohistochemical stains routinely used for distinguishing primary lung ADC from primary lung SCC, have become valuable ancillary tests for surgical pathologists. Thyroid transcription factor-1 (TTF-1), p63, cytokeratins (CK) 5/6, and CK 7 all aid in differentiating lung ADC and lung SCC. More recently, p40 has become a valuable adjunct immunostain in the diagnosis of SCC.[1]

Malignant mesothelioma (MM) is rare malignant tumor arising from mesothelial cells. Malignant mesothelioma is one of the important tumors that needs to be distinguished from lung cancer. Mesothelial markers include calretinin (nuclear and cytoplasmic staining), podoplanin (clone D2-40; membranous staining), CK5 or CK5/6 (cytoplasmic staining), and WT1 (nuclear staining). For differential diagnosis between malignant mesothelioma and lung adenocarcinoma, TTF-1, Napsin A, CEA, claudin 4 (CLDN4), Ber-EP4, and MOC31 are useful markers suggesting lung adenocarcinoma.[2]

Metastases from the extrapulmonary sites represent the most common form of pulmonary neoplasm, as the lungs are one of the most common sites of distant metastases. Although pathologists may more frequently encounter primary lung neoplasms, differentiating primary lung malignancies from metastatic neoplasms, especially from poorly differentiated extrapulmonary adenocarcinomas, can be particularly

challenging. TTF-1 and Napsin A are two most widely used markers to confirm adenocarcinomas of pulmonary origin. It is also highly sensitive and specific for thyroid carcinomas. Napsin A is predominantly expressed in the lung and kidney. Women with breast cancer have a 30% higher risk than the general population of developing a second primary malignancy. In such a case, a panel of TTF-1, napsin A, mammaglobin, GCDFP-15, and GATA3 was used to support the diagnosis of breast carcinoma metastatic to the lung. Both TTF-1 and napsin A had shown to be negative in breast adenocarcinoma. Mammaglobin and GCDFP-15 are established cytoplasmic markers for diagnosing metastatic breast carcinomas, with positivity in 85% and 53% of breast carcinomas and up to 17% and 2% of lung carcinomas, respectively. Prostate and colorectal cancers are two most common malignancies that lead to pulmonary metastases. The common IHC stains used to differentiate primary lung carcinoma from carcinomas of breast, prostate, and colorectal origin are PSA, PSAP, NKX3.1 for prostatic metastasis and CDX2, SATB2 for colorectal metastasis. For other extrapulmonary adenocarcinomas, PAX8 has also been proposed as a third immunomarker used alongside TTF-1 and napsin A to distinguish primary lung adenocarcinomas from metastatic neoplasms. PAX8 is negative in primary lung adenocarcinomas, and has positive expression restricted to epithelial tumors of the thyroid, kidney and Mullerian system.[4]

LIVER

Distinguishing hepatocellular carcinoma (HCC) from cholangiocarcinoma (CC) and metastatic adenocarcinoma (MA) involving the liver can be problematic sometimes, often requiring the use of immunohistochemistry to facilitate diagnosis.

Hep Par 1 expression appears to be largely confined to HCCs, suggesting that this may be a useful marker for evaluating histologically problematic neoplasms in the liver. A bile canalicular pattern of staining with pCEA and CD10 was specific for HCC and was not observed in the other tumors. CK 19 positivity favoured CC over HCC, but was not

useful in differentiating CC from MA. Expression of AFP, although observed in only about one third of the cases, favoured HCC over CC and MA. CK 7 and CK 20 were also useful in this differential diagnosis, particularly when dealing with MA of colonic origin.[50]

In case of liver metastasis, the primary tumour most frequently is located in colon, pancreas, stomach, breast, oesophagus, genitourinary organs. Lung cancer can also metastasize to liver. Neuroendocrine tumours, even small, can give rise to hepatic metastases.[51]

LYMPH NODE

Despite advances in diagnosis and treatment, the existence of lymph node carcinoma of unknown primary site (CUP) has always been an urgent problem worldwide. Metastatic carcinoma of unknown primary site to cervical lymph nodes accounts for 2–5% of all head and neck cancers. Histopathological examination on Haematoxylin and Eosin stain under light microscope was done initially and then subsequent immunohistochemical test (IHC) with CK7 and CK20 were used in all the cases in search of most possible primaries. Depending on the positivity and negativity of these two markers, further more antibodies were used along with radiological investigations to reach the final diagnosis. Other IHC markers used subsequently were TTF1, Napsin A, EMA, p63, CDX2, carcinoembryonic antigen (CEA), CD10, chromogranin, CD56, CA19-9, CA125, neuron specific enolase (NSE), gross cystic disease fluid protein (GCDFP15),estrogen receptor (ER) and progesterone receptor (PR).[52] Metastasis in neck lymph nodes from squamous cell carcinoma is a common situation in cases of patients already diagnosed and treated for cancer of the head and neck, and it may as well be the first overt clinical manifestation.[53] The inguinal area is a relatively uncommon metastatic site of Carcinoma unknown primary sites. There has been a wide variety of primary sites from where inguinal nodal metastasis has been reported. These include some sites, which are quite distant from the pelvis

(nasopharynx, breast, tracheobronchial tree, salivary glands, orbit) but most originate in the pelvis, genitalia or lower limb.[54]

GENITOURINARY SYSTEM

Immunohistochemistry is widely used in distinguishing prostate cancer from its benign mimics and to establish the prostatic origin of poorly differentiated carcinoma. Prostate cancer immunohistochemistry includes introduction of newer basal cell markers such as p63 and overexpression of a-methylacyl coenzyme A racemase (AMACR) in prostate cancer. AMACR positivity should be carefully evaluated taking into account the pattern and intensity of immunoreactivity in the suspect glands compared with that in adjacent benign glands. AMACR marker is at its most useful in the evaluation of morphologically highly suspicious foci in which basal cell marker negativity in the atypical glands alone is considered insufficient for establishing a diagnosis of cancer. Identification of the prostatic origin of metastatic carcinoma is important as metastatic prostatic cancer often responds to hormonal therapy and is generally associated with a significantly longer survival than other metastatic cancers. At metastatic sites where the differential diagnosis includes a variety of other non-prostatic tumours such as those from the lung, urinary bladder and gastrointestinal tract, the prostatic markers, prostate specific antigen (PSA) and prostate-specific acid phosphatase (PSAP) are used in conjunction with other markers such as CDX2 that is generally positive in colorectal adenocarcinoma and thyroid transcription factor 1 (TTF-1) that is positive in most carcinomas of thyroid and lung origin.[55] Prostate involvement by urothelial carcinoma (UC) can occur from direct invasion of an infiltrating UC into the prostate stroma and from intraductal extension of the Urothelial Carcinoma with or without subsequent stromal invasion of the prostate. Prostate-specific antigen (PSA) and prostate acid phosphatase (PAP) have been known to assist in verifying the prostatic lineage in cases of metastatic carcinoma of unknown origin. Urothelial markers, such as CK34βE12, p63, thrombomodulin and GATA 3, have been reported to be useful in identifying tumors of urothelial origin.[56]

Renal cell carcinoma is the seventh most common cancer in the Western world, and its incidence has been steadily increasing during the past few decades, representing 1% to 3% of current malignant visceral neoplasms. The diagnosis of a primary and metastatic renal cell carcinoma can be difficult, especially in small biopsies, because of the wide variety of histological appearances and clinical presentations that RCC can assume. PAX8 and CD10 are the two most commonly used pan-renal cell carcinoma markers, although some types of renal cell carcinomas are less likely to express CD10, such as oncocytoma and chromophobe renal cell carcinoma.[57] PAX8 is one of the most useful markers to establish renal epithelial neoplasm. It is a useful marker for diagnosing primary and metastatic RCC. PAX8 is positive in almost all RCCs, including clear cell RCC, papillary RCC, chromophobe RCC, microphthalmia transcription factor (MiT) family translocation RCC.

Markers used to support urothelial differentiation include CK7, CK20, high-molecular-weight cytokeratin (HMWCK, 34bE12), p63, and CK5/6. Urothelial carcinoma is one of the few tumors that frequently coexpress CK7 and CK20, with coexpression of CK7 and CK20 reported in upto 50% to 62% urothelial carcinomas. Other markers such as HMWCK, p63, and CK5/6 are not specific for urothelial carcinoma either. GATA3, a newly identified marker, is the first line marker that the International Society of Urologic Pathology recommends to confirm the urothelial differentiation. GATA3 is expressed in 80% to 90% of urothelial carcinomas with nuclear staining.[58]

Among cancers of the female genital tract, the incidence of ovarian carcinoma ranks below only to carcinoma of the cervix and the endometrium. CK7 is most helpful marker to distinguish primary ovarian carcinoma from metastatic colorectal carcinoma of the ovary. Nearly 96% of ovarian adenocarcinomas were positive for CK7 in contrast to metastatic colorectal, that showed only 25% positivity. The distinction between a primary ovarian adenocarcinoma and metastatic adenocarcinoma from various sites can be problematic. Metastatic

colorectal adenocarcinomas may mimic an ovarian endometrioid carcinoma or a mucinous neoplasm of intestinal type, either borderline or malignant. In the distinction between an ovarian endometrioid adenocarcinoma and a metastatic colorectal adenocarcinoma with a pseudoendometrioid pattern, a panel of markers can assist. Primary ovarian endometrioid carcinomas are usually positive with CK7, ER and PAX8 and negative with CK20, CEA and CDX2 while the converse immunophenotype is the rule in metastatic colorectal adenocarcinomas. In distinguishing between a primary ovarian mucinous tumour and a metastatic colorectal adenocarcinoma, immunohistochemistry is less helpful. This is because many primary ovarian mucinous neoplasms exhibit CK20 positivity. They are also commonly positive, sometimes diffusely with CEA, CDX2 and CA19.9. Also an uncommon scenario is simultaneous involvement of the uterine corpus and one or both ovaries by an adenocarcinoma. Most commonly, the adenocarcinomas are endometrioid in type but sometimes they can be serous. With endometrioid adenocarcinomas involving the uterus and one or both ovaries, immunohistochemistry is of little or no use in ascertaining the relationship between the tumours as the immunophenotype of a primary ovarian and uterine endometrioid adenocarcinoma is almost identical. With a serous carcinoma involving the uterus and one or both ovaries, WT1 staining may be of some value to distinguish between a uterine serous carcinoma with metastasis to the ovary, metastasis from the ovary/tube to the endometrium (“drop metastasis”) and independent synchronous neoplasms, the latter being unlikely. Most tubo ovarian serous carcinomas exhibit diffuse nuclear positivity for WT1 while most uterine serous carcinomas are negative.[59]

Endometrioid carcinoma is positive for CK7, ER, PR, and CA 125 and negative for CK20 where as Colon carcinoma shows a reverse pattern.

The therapeutic approach for endometrial carcinomas and endocervical type adenocarcinoma is different; therefore, indicating the cancer origin is of great importance, but may be tricky based only on morphology,

particularly in curettage samples. The general IHC panel for such a situation includes ER, PR and vimentin strongly positive in endometrial carcinoma, and p16, mCEA and HPV in situ hybridisation diffusely positive in endocervical adenocarcinoma of the usual type.[60]

PANCREATICOBILIARY AND GASTROINTESTINAL TRACT

Malignant neoplasms of the gastrointestinal (GI) tract, liver, biliary tract, and pancreas are the most common cancers of the body, with an estimated 304930 new cases and an estimated 153030 deaths in the year 2016 in the United States. Most of these neoplasms are aggressive malignancies with high mortality rates. In 2012, carcinomas arising from colorectum and pancreas were the third and fourth leading cancer deaths, respectively, in both male and female patients. Liver cancer was also the fifth leading cancer death in male patients. The prognosis of pancreatic and hepatobiliary cancers is extremely poor, with adjusted 5-year relative survival rates of 8% and 18%, respectively. In fact, the death rates are increasing for cancers of the liver and pancreas despite a significant drop of 23% in the overall cancer death rate since 1991. One of the major obstacles in improving patient survival for these cancers is the failure of early diagnosis.[61]

Pancreatic ductal adenocarcinomas are consistently positive for CK7 diffusely and strongly, while negative for CK20. Possibility of neuroendocrine can be demonstrated by immunostaining with chromogranin, synaptophysin and NSE.

Classification of ampullary adenocarcinomas into pancreaticobiliary type versus intestinal type may not be straight forward. CDX2 immunostain positivity is more often seen in intestinal type.

Metastatic neoplasms of the pancreas are rare, accounting for approximately 2% of all pancreatic malignancies. The most common carcinomas metastasising to the pancreas are RCC, melanoma, non–small cell carcinoma of the lung, colorectal ADC, and breast carcinoma. Microscopic differentiation of adenocarcinomas from the pancreaticobiliary and upper gastrointestinal tracts may be difficult

because of shared histologic and immunohistologic features. The prevalence of CK17 expression in pancreatic adenocarcinomas and extrahepatic bile duct adenocarcinomas is substantially higher than in upper gastrointestinal tract and colorectal adenocarcinomas. Most cases of both these regions express CK7. Expression of CK20 is found at a lower prevalence. In contrast, colorectal adenocarcinoma is characterized by a high prevalence of CK20 expression and a low prevalence of CK7 expression, allowing separation of colorectal adenocarcinoma from upper gastrointestinal and pancreaticobiliary adenocarcinomas with a high degree of certainty.[62]

Adenocarcinoma of unknown origin are a common clinical problem. However, over the past few years, a number of novel markers have emerged, including CK7, CK20, TTF1, CDX2, and mesothelin.

Currently available immunohistochemistry markers cannot distinguish signet ring cell carcinomas of the lower GI tract and upper GI tract, suggesting the need for more specific diagnostic markers. SATB2 is a novel and sensitive marker for colorectal carcinoma. SATB2 marker can reliably identify primary and metastatic signet ring cell carcinomas of lower GI tract origin. Compared with CDX2, SATB2 and dual SATB2, and CDX2 positive expression both had significantly higher specificities for distinguishing a signet ring cell carcinoma originating from the lower GI tract from those of the upper GI tract.[63]

There were various studies conducted on different IHC markers for determining the sensitivity and specificity of various markers for the diagnosis of a particular cancer.

In 2002 Sean K. Lau et al conducted a study to distinguish between hepatocellular carcinoma (HCC) from cholangiocarcinoma (CC) and metastatic adenocarcinoma (MA) involving the liver. Authors had evaluated Hep Par 1 along with other immunohistochemical markers used to differentiate HCC, CC, and MA. Fourty two cases of HCC, 9 cases of CC, and 56 cases of MA (24 colon, 15 pancreas, 8 ovary, 5 breast, and 4 stomach) were studied. Hep Par 1 is sensitive and

specific for HCC, with 38 out of 42 (90%) cases staining positively, whereas reactivity was observed in only 8 out of 56 (14%) MAs and 0 out of 9 CCs. Although limited somewhat by poor sensitivity, a bile canalicular pattern of staining with pCEA and CD10 was specific for HCC and was not observed in the other tumors and concluded that these markers should be included in the panel to distinguish these three entities.[53]

In 2006 Russell Vang et al conducted a study on coordinate expression profiles and staining distribution in 179 classified mucinous tumors in the ovary, including 53 primary tumors and 126 secondary tumors. A CK7+/CK20+ immunoprofile was the most common profile in primary ovarian tumors (74%), upper gastrointestinal tract tumors (78%), and endocervical tumors (88%) but was occasionally observed in lower intestinal tract tumors (colorectal: 11%; appendiceal: 13% of low-grade tumors, 35% of carcinomas). A CK7-/CK20+ immunoprofile was the most common profile in lower intestinal tract tumors (79%) and was uncommon in upper gastrointestinal tract tumors (9%), rarely seen in primary ovarian tumors (4%), and not seen in endocervical tumors. A CK7+/CK20- profile was observed in some primary ovarian (23%), upper gastrointestinal tract (13%), and endocervical tumors (13%) but not in lower intestinal tract tumors. Hence concluded that immunohistochemical staining distribution can supplement CK7/CK20 coordinate expression profiles to distinguish subsets of primary ovarian and metastatic lower intestinal tract mucinous tumors having overlapping immunoprofiles.[64]

In year 2010 Katia R. M. et al studied usefulness of basal cell markers 34ßE12 and p63 antibodies for identifying basal cells as several benign mimickers of prostatic adenocarcinomas such as atrophy, atypical adenomatous hyperplasia, nephrogenic adenoma, and mesonephric hyperplasia, can stain negatively with these markers and concluded that the use of these markers did not lead to diagnosis of insignificant tumors and required an extended IHC panel.[65]

In year 2013 Decio de Caly et al did a retrospective study to evaluate the value of IHC in diagnosis of malignant cervical lymph node. Out of all the 32 biopsies of cervical lymph nodes, in 16 (50%) the immunohistochemistry was employed. Out of which 68.75% (11/16) were haematological neoplasms and 31.25% (5/16) were carcinomas and concluded that immunohistochemistry was used in 50% of lymph node biopsies of cases suspicious for malignancy, the use in epithelial cell line lesions occurred at 31.25% and 68.75% in hematopoietic cell lines, immunohistochemistry was used in 100% of the lymphoma cases. [66]

In year 2015 Grzegorz T Gurda et al studies a total of 246 FNA cases including 102 primary NSCLC and 144 primary NSCLC which had metastasized to other sites. The immunostaining patterns of TTF-1, Napsin A, CK7, p63 and CK5/6 were correlated with the histological diagnosis of the carcinoma. In 72 primary adenocarcinoma lung, TTF1, Napsin A and CK7 showed a sensitivity and specificity of 84.5%/96.4%, 92.0%/100%, and 93.8%/50.0% respectively. In 30 primary SCCs, CK5/6 and P63 showed a sensitivity and specificity of 100%/77.8% and 91.7%/78.3% respectively. In 131 metastatic ADCs, Napsin A had highest specificity (100%), versus TTF-1 (87.5%) and CK7 (25%); whereas in 13 metastatic SCCs, CK5/6 and p63 showed a sensitivity/specificity of 100%/84.6% and 100%/68.4%, hence demonstrated that IHC markers had variable sensitivity and specificity in the subclassification of primary and metastatic adenocarcinoma and squamous cell carcinoma.[5]

In year 2016 Roy et al evaluate the role of IHC in diagnosing metastatic carcinoma with unknown primary. Forty eight cases of metastatic carcinoma of unknown primary to lymph node, bone, soft tissue were taken. After a histopathological examination total seventeen antibodies were used in immunohistochemical test to detect the most possible primary site. Out of 48 cases, lung was primary site in 16 cases, gastrointestinal and pancreaticobiliary tract in 12 cases, breast in 4 cases, thyroid in 5 cases, ovary in 8 cases and kidney in 3 cases and

demonstrated that immunohistochemistry has utility in detecting the primary site expeditiously, and thereby guide management and predict prognosis in a given case.[56]

In year 2018 Changqing et al hypothesized that SATB2 can reliably identify primary and metastatic signet ring cell carcinomas of lower Gastrointestinal tract origin. SATB2 and CDX2 were performed on 159 primary and metastatic signet ring cell carcinomas of GI tract origin. Positive SATB2 immunoexpression was identified in 82% of appendiceal, 88% of colorectal, 13% of gastric, and 35% of gastroesophageal junction signet ring cell carcinomas. Primary and metastatic signet ring cell carcinomas of lower GI tract were more frequently SATB2 positive than those from upper GI tract (85% vs.19%). Compared with CDX2, SATB2 and dual-positive staining for SATB2 and CDX2 both the markers had higher specificities for signet ring cell carcinomas from the lower GI tract (81% vs. 49% and 86% vs. 49%, respectively) and concluded that SATB2 is a relatively specific immunohistochemistry marker for both metastatic and primary signet ring cell carcinomas of lower GI tract origin.[66] Despite of the great increase in understanding of molecular pathogenesis of colorectal carcinoma, immunohistochemistry remains the foundation for the resolution of the problematic cases. Due to relative high incidence of adenocarcinoma of colon and rectum in the population which makes its pathological diagnosis more important.

In year 2015 Naik et al studied the immunohistochemical profile of estrogen receptors (ER), progesterone receptors (PR), Ki-67, and p53 in ovarian epithelial tumors and correlation with clinical and histopathological findings was made. 110 cases of surface epithelial ovarian tumors were studied. The expression of ER was more in malignant tumors (81.25%) than borderline (75%) and benign (24.39%). As compared to ER, the expression of PR was more in benign tumors than borderline and malignant tumors. The immunoexpression of p53 was less in benign (6.1%) than borderline (75%) and malignant tumors (81.25%). A positive correlation was

observed in p53 expression and tumor grade. Therefore if IHC marker report of ER, PR and Ki-67 is included in each pathology report will pave the way for better understanding of biological behaviour and modify treatment strategies.[67]

MATERIAL AND METHODS

SOURCE OF DATA

The present 30 months study (January 2018 to June 2020) to analyse the immunohistochemical profile of epithelial tumors was conducted in the Department of Pathology Dayanand Medical College Ludhiana. A total of 302 cases of carcinomas on which IHC was done were analysed. All the cases with immunohistochemical work up were analysed with respect to the histomorphological features favouring that of carcinoma.

METHOD OF COLLECTION OF DATA

Inclusion criteria:

All epithelial tumors of various organs undergoing immunohistochemistry for definite categorisation.

Exclusion criteria:

1) All sarcomas and lymphomas.
2) Prognostic markers done on carcinoma breast.
3) Neuroendocrine tumors

Duration of study:

This was two and half years study, conducted one year retrospective from January 2018 to December 2018 and one and half year prospective between January 2019 to June 2020.

Study Design: This was prospective and retrospective study.

Methodology:

The tissue obtained in the histopathology lab were processed. Paraffin embedding and subsequent staining by Haematoxylin and Eosin was done. The slides were then subjected to histopathological examination. All 302 cases with diagnosis of carcinomas were subjected to immunohistochemical examination.

HAEMATOXYLIN AND EOSIN STAINING

The paraffin embedded tissue blocks cut at 2-3 micron thickness by rotator microtome. Then the slides were kept on a hot plate in order to dewax the sections at temperature of upto 60 degree. Following this, the slides were deparaffinised in xylene, then hydrated through graded

alcohol to water. Then it is stained with Harris Haematoxylin for 15 minutes. The sections were washed well in running tap water until sections turned blue. The sections were then differentiated in 1% acid alcohol (1% HCL in 70% Alcohol) for 5-10 seconds, washed well in tap water for 5 minutes or less. These were then stained with 1% eosin for 10 minutes followed by washing in running tap water for 1-5 minutes. Sections were dehydrated once again through grade alcohol, cleared xylene and mounted with DPX avoiding air bubbles.

IMMUNOHISTOCHEMISTRY- STANDARD STREPT AVIDIN PROCEDURE

1. 2-3 um sections were cut and mounted on Poly-L-lysine coated slides. Slides were dried overnight at 37 degree C and dewaxed in xylene and hydrated.
2. Antigen retrieval procedure- The black box was filled 3/4th with citrate buffer and the slide carrier with slides was placed in it. The black box was placed in microwave for 9 mins.
3. Boiling of the solution was observed and the microwave was reset for 6 min and started.
4. The box was removed and cooled under tap water
5. Blocking endogenous peroxidase - Sections were incubated at room temperature in 0.3% H2O2 in methanol for 30-45 min and rinsed in running tap water for 5-10 mins and then dipped in distilled water for 1 min.
6. The slides were placed in Tris buffer (only one change for 5 min).
7. Blocking reagent was applied for 5-10 min and excess of it is wipped off.
8. Primary antibodies were applied covering the whole section and incubated at room temperature for 1 hour.
9. Slides were then washed in Triss buffer for 5 minutes.
10. Ultra Vision One HRP polymer covering the whole tissue was applied and incubated at room temperature for 45 mins.

11. Washing was done in TBS buffer (Tris buffer saline) for 5 min (4 changes).
12. One drop of substrate DAB (3,3- Diaminobenzidine) solution was applied on each slide covering the whole material and incubate for 10-15 mins, then washed in deiodinized water.
13. Haematoxylin was applied for few seconds and washed under running water.
14. They were allowed to dry and dehydrate in alcohol and incubated for 2 mins and allowed to dry.
15. Mount in DPX (distyrene dibutyl phthalate xylene)

IMMUNOHISTOCHEMISTRY- VENTANA BENCHMARK GX PROCEDURE- Automatic

The instrument is for automatic preparation of tissues throughout process of deparaffinisation upto staining, which allows to process more tissues, more effectively in a shorter time.

STATISTICAL ANALYSIS:

Data were described in terms of range; mean ±standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. All statistical calculations will be done using SPSS (Statistical Package for the Social Science) SPSS 21 version (SPSS Inc., Chicago, IL, USA).

OBSERVATIONS AND RESULTS

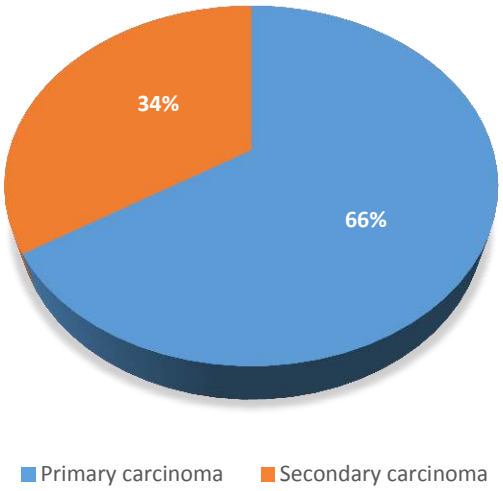
The present 30 months study (January 2018 to June 2020) to analyse the immunohistochemical profile of epithelial tumors was conducted in the Department of Pathology Dayanand Medical College, Ludhiana. All the cases with immunohistochemical work up were analysed with respect to the histomorphological features, immunohistochemical characteristics and an attempt was made to reach at a definite diagnosis. During the study period a total of 302 cases of carcinomas on which IHC was done were analysed. Males were more commonly affected than females comprising 57% of total cases (M:F=1.3:1) and 61-70 years was the commonest age group affected. (Table 1)

TABLE 1: Age wise distribution of all epithelial tumors (n=302)

Age range	No. of cases (n=302)	Percentage
21-30	2	0.6%
31-40	20	6.1%
41-50	45	13.6%
51-60	95	28.8%
61-70	108	32.7%
71-80	49	14.8%
81-90	11	3.3%

Of the 302 cases, majority 66% (201/302) were primary carcinomas of the site involved and 34% (101/302) were labelled as secondary carcinomas (metastatic carcinomatous deposits). (FIGURE 1)

FIGURE 1: DISTRIBUTION OF THE CASES



1. METASTATIC CARCINOMATOUS DEPOSITS

One hundred and one cases (33.4%) of metastatic carcinomatous deposits with unknown primary to different nodal and extranodal sites were analysed. Mean age of presentation was 65.2 years within age group of 61-70 years. (Table 2) Males were more commonly affected with M:F ratio of 1.2:1.

TABLE 2: Age wise distribution of Metastatic carcinomatous deposits (n=101)

AGE GROUP	NO OF CASES (n=101)	PERCENTAGE
31-40	5	4.9%
41-50	9	8.9%
51-60	32	31.7%
61-70	34	33.7%
71-80	21	20.8%

Among these 101 cases (33.6%), majority 81.2% (82/101) of cases involved the extranodal sites with liver being the commonest (40/82, 48.9%) and 18.8% (19/101) patients had nodal disease with supraclavicular nodes (12/19, 63.2%) being the commonest. (Table 3)

TABLE 3: Location wise distribution of Metastatic carcinomatous deposits (n=101)

SITE		NO OF CASES (n=101)	PERCENTAGE
EXTRANODAL	Liver (n=40)	82	81.2%
	Omentum (n=27)		
	Lung (n=8)		
	Brain (n=4)		
	Bone (n=3)		
NODAL	Supra clavicular (n=12)	19	18.8%
	Cervical(n=4)		
	Abdominal (n=3)		

Immunohistochemical analysis of Metastatic Carcinomatous deposits

The metastatic carcinomatous deposits were analysed using algorithmic approach and tumors were subdivided on the basis of CK7 and CK 20 immunoexpression into CK7+/CK20-, CK7-/CK20+, CK7+/CK20+ and CK7-/CK20- groups. Majority of the cases fell in the CK7+/CK20- group comprising 65.3% (66/101) cases.

Further IHC markers were done depending on the site of metastasis, clinical details and radiological findings. The IHC markers used included TTF-1, Napsin A, CDX2, PAX8, p40, p63, CEA, WT1, ER, Hep Par 1, Mammaglobin, PSA, CK5/6, Uroplakin, GATA3, CD10, RCC and SATB2.

FIGURE 2: Metastatic deposits with CK7+/CK20- expression

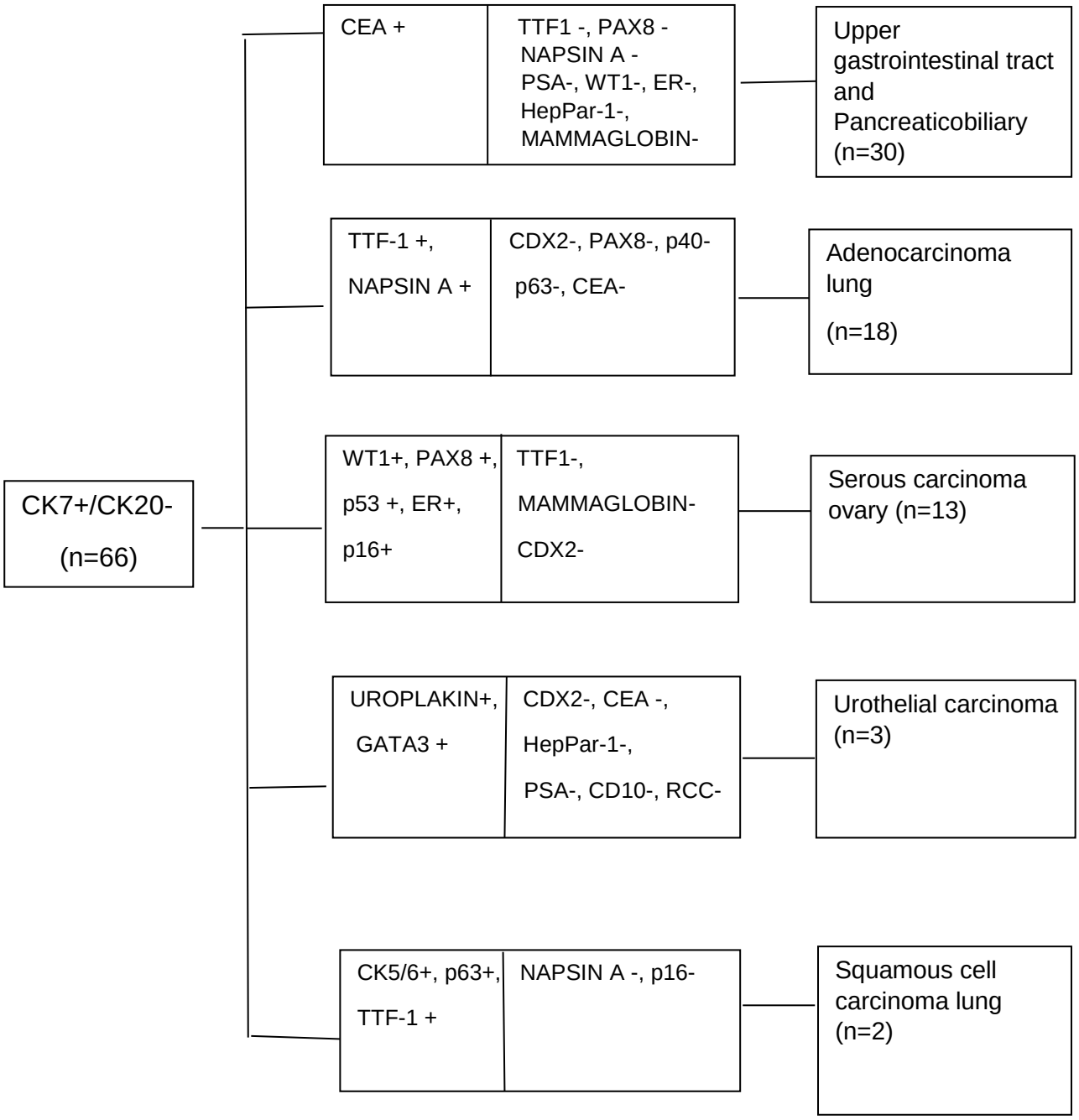
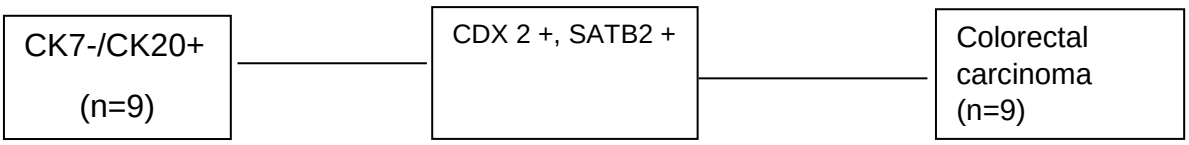


FIGURE 3: Metastatic deposits with CK7-/CK20+ expression



CK7+/CK20-

Out of 66 cases with CK7+/CK20- immunoexpression, metastatic adenocarcinomatous deposits from upper Gastrointestinal tract and pancreaticobiliary system were most common (30/66, 45.5%), followed by adenocarcinoma lung (18/66, 27.3%),serous carcinoma ovary (13/66 ,19.7%), urothelial carcinoma (3/66, 4.5%) and squamous cell carcinoma lung (2/66, 3%). (Figure 2)

Upper GIT and pancreaticobiliary system

Among all the metastatic carcinomatous deposits from upper gastrointestinal tract and pancreaticobiliary system 12 were females within age range of 31-80 years and 18 were males within age range of 41-80 years.

CEA was positive in 100% (30/30) of cases, CDX2 was positive in 34.5% (10/29) of cases. PAX8 (0/13), HepPar-1 (0/8), TTF-1 (0/28) and napsin A (0/16) were negative in all the patients. Mammaglobin, WT1, ER were done on female patients and were negative. PSA was done on male patients and was found to be negative.

On further correlating with clinical history and imaging studies six cases were of cholangicarcinoma, eleven cases were of pancreaticobiliary adenocarcinoma, twelve cases were from gastric adenocarcinoma and remaining one case was from oesophageal adenocarcinoma.

Serous carcinoma ovary

All the 13 cases of metastatic carcinomatous deposits from serous carcinoma ovary were between age range of 41-80 years. The mean age of involvement was 60.2 years.

PAX8 and WT1 were positive in 100% cases. ER was positive in 83.3% (10/12), p53 was positive in 71.4% (5/7) and p16 was focal positive in 2 cases. TTF-1 (0/7), Mammaglobin (0/5) and CDX2 (0/8) were negative in all the cases.

Adenocarcinoma lung

Among all the 18 cases of metastatic adenocarcinomatous deposits from lung, 13 were male patients between age range of 41-80 years and 5 females between age range of 51-80 years. Males were more commonly involved with M:F ratio of 2.6:1.

TTF-1 and Napsin A were positive in 100% of cases. CEA was positive in 33% (2/6) of cases. CDX2 (0/13), PAX8 (0/5), p40 (0/9) and p63 (0/4) were negative.

Urothelial carcinoma

All the cases of metastatic urothelial carcinoma were male patients between age range of 51-80 years.

Uroplakin was positive in 100% of cases. p40 was positive in 33.3%(1/3) and GATA3 was positive in 100% (2/2). CDX2, CEA, HepPar-1and PSA were negative in all the cases. Also CD10 (0/1) and RCC (0/1) were negative.

Squamous cell carcinoma lung

Both the cases of squamous cell carcinoma lung (64 year female and 76 year male) were metastatic to lymph node. CK5/6, p63, TTF-1 were positive in 100% of the cases and also both were Napsin A and p16 negative.

CK7-/CK20+

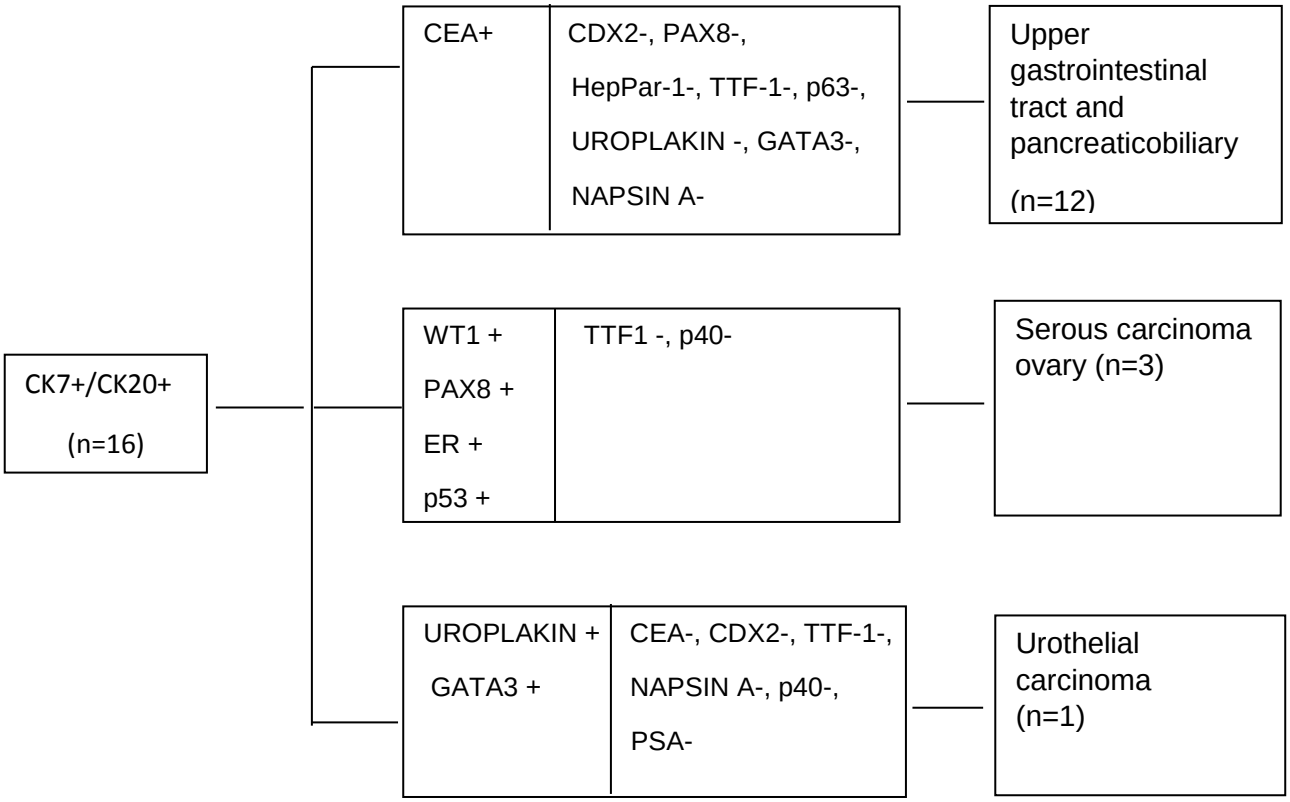
All the cases with CK7-/CK20+ immunoexpression were metastatic adenocarcinomas from lower gastrointestinal tract.

Colorectal carcinoma

All the cases of metastatic colorectal carcinoma were between age range of 41-80 years. Males were predominantly affected with M:F ratio of 1.2:1.

Immunoexpression of CDX2 and SATB2 (6/6) was observed in 100% of the cases. All the female patients were negative for PAX8 and WT1. (Figure 3)

FIGURE 4: Metastatic deposits with CK7+/CK20+ expression



CK7+/CK20+

Out of 16 CK7+/CK20+ cases, metastatic adenocarcinomatous deposits from pancreaticobiliary region were most common (31.2%, 5/16) followed by serous carcinoma ovary (18.8%, 3/16), gastric adenocarcinomas (6.2%, 1/16), and urothelial carcinoma (6.2%, 1/16), upper Gastrointestinal tract / pancreaticobiliary system (37.5%, 6/16) of cases. (Figure 4)

Pancreaticobiliary and Upper gastrointrestinal tract

Five cases of metastatic carcinomatous deposits from pancreaticobiliary system (3 males and 2 females) were within age range of 51-80 years. On imaging studies, all the cases presented with mass lesion in pancreas.

CEA was positive in 100% (9/11) of cases. PAX8 (0/7), CDX2 (0/9) HepPar-1 (0/3), TTF-1 (0/9), p63 (0/2), Uroplakin (0/2), GATA3 (0/3) and Napsin A (0/6) were negative in all the patients.

Six cases with similar Immunohistochemistry findings which could not be categorised to any of the site, were labelled as upper gastrointestinal tract/ pancreaticobiliary system. Adequate history was lacking in these cases for further categorisation.

One case of gastric adenocarcinoma which was positive for CEA and CDX 2 and was negative for PAX8, HepPar-1, TTF-1, p63, UROPLAKIN, GATA3 and Napsin A.

Urothelial carcinoma

A 65 years old male patient was diagnosed with metastatic urothelial carcinoma.

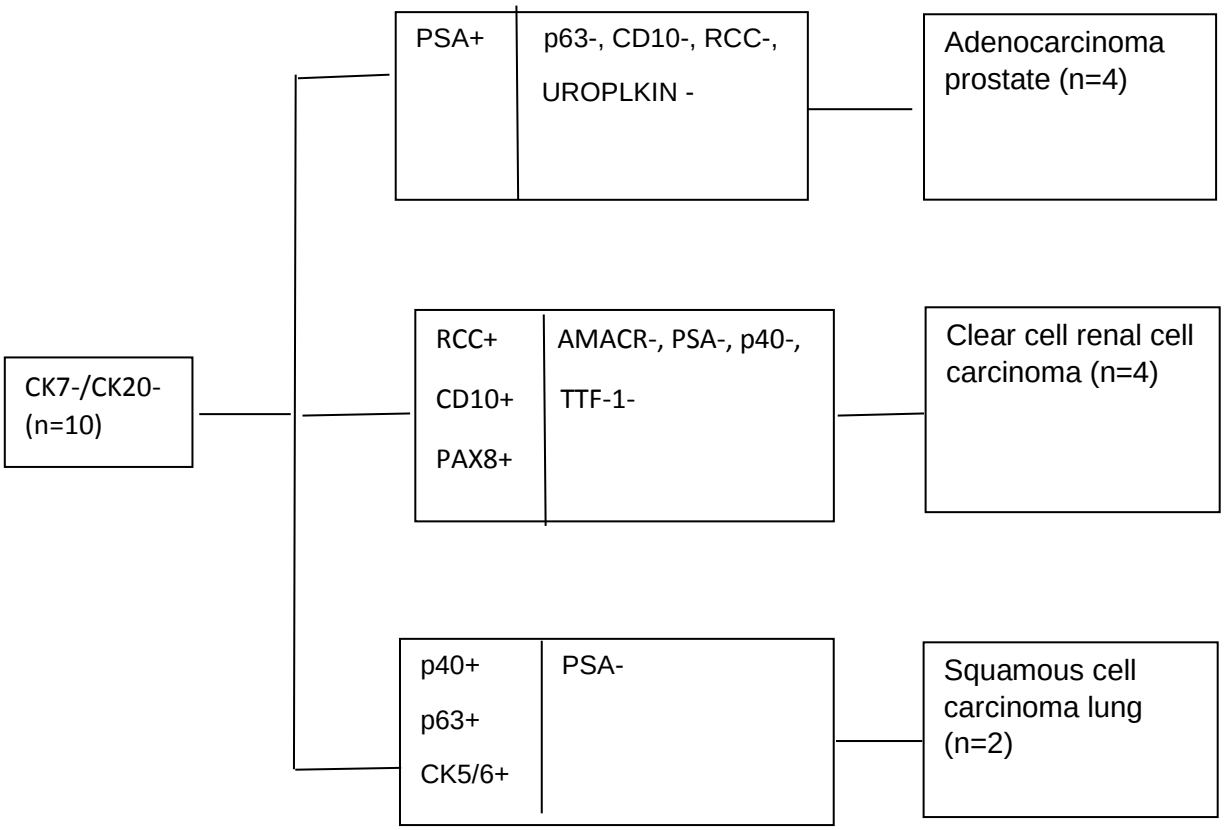
Immunoexpression of Uroplakin was observed in the tumor cells, however tumor cells were negative for CEA, CDX2, TTF-1, NAPSIN A, p40, PSA and neuroendocrine markers.

Serous carcinoma ovary

All the three cases of metastatic carcinomatous deposits from serous carcinoma ovary were between age group of 41-70 years and presented with omental thickening.

PAX8 and WT1 were expressed in 100% cases. ER was positive in 33.3% (1/3), p53 was positive in 100% (1/1). TTF-1 (0/3) and p40 (0/1) were negative.

FIGURE 5: Metastatic deposits with CK7-/CK20- expression



CK7-/CK20-

Out of 10 CK7-/CK20- cases, metastatic carcinomatous deposits from prostate and clear cell renal cell carcinoma constituted 40% (4/10) each, followed by squamous cell carcinoma lung (20%, 2/16). (Figure 5)

Adenocarcinoma prostate

All the cases of metastatic adenocarcinoma prostate were between age range of 51-80 years.

PSA was positive in 100% of cases, however p63 (0/4), CD10 (0/2), RCC (0/2) and Uroplakin (0/2) were negative.

Squamous cell carcinoma lung

Both the cases of metastatic carcinomatous deposits from squamous cell carcinoma lung were 55 and 65 year old male. CK5/6, p63 and p40

were positive in tumor cells of 100% cases. Napsin A, TTF-1 and PSA were negative in both the cases

Clear cell renal cell carcinoma

All the cases of metastatic clear cell renal cell carcinoma (one female and three male) were between the age range of 51-70 years. Tumor cells in 100% cases expressed RCC, CD10 and PAX8. They were negative for TTF-1 (0/4), p40 (0/4), AMACR (0/3).

Distribution of different types of carcinoma in nodal and extranodal sites

Analysing all the types of metatstatic deposits the most predominant type of metastatic carcinomatous deposit to different nodal and extranodal sites was from adenocarcinoma lung (18/101). (Table 4)

TABLE 4: Distribution of different types of carcinoma in Nodal and Extranodal sites

Tumor Type	Extra nodal (n=82)	Nodal (n=19)	Total (n=101)
Adenocarcinoma lung	13	5	18
Pancreaticobiliary	16	0	16
Serous carcinoma ovary	14	2	16
Gastric adenocarcinoma	11	2	13
Colorectal Adenocarcinoma	9	0	9
Cholangiocarcinoma	3	3	6
Upper gastrointestinal tract/ pancreaticobiliary system	6	0	6
Prostatic Adenocarcinoma	3	1	4
Urothelial Carcinoma	4	0	4
Clear cell renal cell Carcinoma	3	1	4
Squamous cell carcinoma lung	0	4	4
Esopahgeal adenocarcinoma	0	1	1

2 PRIMARY EPITHELIAL TUMORS

There were 66.5% (201/302) cases of primary epithelial carcinomas arising from various sites. Lung was the most common site (28.8%) followed by female genital tract (26.9%), gastrointestinal tract (15.9%), male genital tract (7.5%), pancreas (7.0%), urinary system (6.4%), liver (4.5%) and head and neck (3.0%). (Table 5)

TABLE 5: Site distribution of primary epithelial tumors (n=201)

SITE	NO OF CASES (n=201)	PERCENTAGE
Lung	58	28.8%
Female genital tract	54	26.9%
Gastrointestinal tract	32	15.9%
Male genital tract	15	7.5%
Pancreas	14	7.0%
Urinary system	13	6.4%
Liver	9	4.5%
Head and neck	6	3.0%

LUNG

Lungs were most commonly involved site of carcinomas comprising 28.8% (58/201) of total cases of primary carcinomas. Males were more commonly affected with mean age of 56.2 years.

Out of 58 cases of primary lung carcinomas, adenocarcinomas (58.6%, 34/58) were most common subtype followed by squamous cell carcinoma (41.4%, 24/58).

IHC markers for TTF-1, Napsin A, p40 and/or p63 were done on all these cases (58/58). All the cases which were negative for TTF-1, Napsin A, p40 and/or p63 were labelled as metastatic carcinomatous deposits.

Adenocarcinoma

Adenocarcinoma lung was the most common subtype of primary carcinoma lung. Males were predominantly affected with M:F ratio of 1.8:1. The mean age of presentation was 52.7 years with age range of 51-60 years.

On histopathology examination, glandular configuration and nests were the predominant patterns of tumor cells arrangement.

On immunohistochemistry TTF-1 and Napsin A were most specific, expressed in 100% of cases. p40 was negative in all the cases. Also p63 was positive in 33% (3/9) of cases (Table 6).

CK 7 and CK 20 were done on 13 out of 34 cases of adenocarcinoma and 100% (13/13) cases were CK7+/CK20-.

TABLE 6: Immunohistochemistry of primary adenocarcinoma lung

IHC MARKER	**NO OF CASES (n=34)**	**PERCENTAGE**
TTF-1	34(34)	100%
NAPSIN-A	17(17)	100%
CK5/6	0(6)	0%
p63	3(9)	33%
p40	0(24)	0%

Squamous cell carcinoma

Squamous cell carcinoma was diagnosed in 41.4% (24/58) of total cases of lung. Males were predominantly affected with M:F ratio of 7:1. The mean age of presentation was 65.6 years with age range of 61-70 years

On histopathology examination, nests and sheets were the predominant pattern of tumor cell arrangement in squamous cell carcinoma. However only 8.3% (2/24) cases were having individual cell keratinisation thus classified as squamous cell carcinoma.

On immunohistochemistry, p40 and p63 were most specific, expressed in 100% and 93% of cases. CK5/6 was positive in 79% (19/24) of cases. TTF-1 was negative in all the cases (0/24) (Table 7).

TABLE 7: Immunohistochemistry of Squamous cell carcinoma lung (n=24)

IHC MARKER	NO OF CASES (n=24)	PERCENTAGE
CK5/6	19(24)	79%
p63	12(13)	93%
TTF-1	0(24)	0%
NAPSIN-A	0(13)	0%
p40	16(16)	100%

FEMALE GENITAL TRACT

Female genital tract was the second most commonly involved site for carcinoma and constituted 26.9% (54/201) of cases. Most common age group affected was 51-60 years.

Site distribution of carcinomas of female genital tract

Out of 54 cases of female genital tract, ovaries were most commonly involved (48.2%, 26/54) followed by endometrium (40.8%, 22/54) and cervix (11%, 6/54).

Ovary

Ovarian carcinomas was diagnosed in 48.2% (26/54) cases. Mean age of involvement was 49 years with most common age group affected being 41-50 years.

Predominant subtype of primary ovarian carcinoma was serous carcinoma (46.2%, 12/26) followed by mucinous carcinoma (27%, 7/26), endometroid carcinoma (15.4%, 4/26) and clear cell carcinoma (11.4%, 3/26) in descending order of frequency.

IHC diagnostic panel for primary ovarian carcinoma included PAX8, WT1, Napsin A, ER, p16, p53.

High grade serous carcinoma ovary

High grade serous carcinomas were the predominant subtype of ovarian carcinoma comprising 46.2% (12/26) of cases with mean age of presentation was 51 years.

On histopathological examination, eight cases of high grade serous carcinoma were having papillae, micropapillae, glands and nest as predominant pattern of tumor cell arrangement. All these cases showed high grade nuclear details with high mitotic count.

On immunohistochemistry, diffuse nuclear expression of WT1 and P53 (10/10) was observed in 100% of the cases and were the most specific markers. p16 was expressed in 85.7% (6/7) and PAX8 (5/5) was positive in 100% of the cases.(Table 8)

Ki-67 labelling index of all the patients was ranging between 30 to 90 % in the highest proliferating areas.

TABLE 8: Immunohistochemistry findings of High grade serous carcinoma (n=12)

IHC MARKER	**NO OF CASES (n=12)**	**PERCENTAGE**
WT1	12(12)	100%
PAX8	5(5)	100%
p53	10(10)	100%
p16	6(7)	85.7%

Mucinous carcinoma ovary

Mucinous carcinoma was the second most common subtype of primary ovarian carcinoma (27%, 7/26) of total ovarian carcinoma cases. Mean age of presentation was 46 years.

On Histopathological examination showed tumor cells arranged predominantly in glands, papillae and nests.

On immunohistochemistry, CK7+/CK20+ expression was seen in 100% (7/7) cases of mucinous carcinoma. PAX8 was positive in 57.1% (4/7) and p53 was positive in 100% (2/2) cases. WT1, Napsin A, CDX2 were negative in all the cases.(Table 9)

TABLE 9: Immunohistochemistry findings of mucinous carcinoma ovary. (n=7)

IHC MARKERS	NO. OF CASES (n=7)	PERCENTAGE
PAX 8	4(7)	57.1%
WT1	0(7)	0%
CDX2	0(6)	0%
NAPSIN A	0(3)	0%
p53	2(2)	100%

Endometroid carcinoma ovary

Endometroid carcinomas ovary was diagnosed in 15.4% (4/26) of cases of primary ovarian carcinoma. Mean age of presentation was 53.2 years of age.

Histopathology examination revealed glandular configuration and nesting pattern as the predominant pattern of tumor cell arrangement. These cases were diagnosed as Adenocarcinoma-NOS which required IHC for further subtyping

On immunohistochemistry, ER was diffuse nuclear positive in 100% (4/4) of cases, p16 was focal positive in 100% (2/2), P53 and PAX8 were positive in 100% (4/4) the cases. WT1 was negative in all the cases. (Table 10)

TABLE 10: Immunohistochemistry findings of Endometroid carcinoma (n=4)

IHC MARKER	NO OF CASES (n=4)	PERCENTAGE
ER	4(4)	100%
p16	2(2)	100%
p53	4(4)	100%
PAX8	4(4)	100%
WT1	0(7)	0%

Clear cell carcinoma ovary

Clear cell carcinoma was rarest of all the subtypes of ovarian carcinomas diagnosed in 11.4% (3/26) of the cases. Mean age of presentation was 53.2 years of age.

Histopathology examination exhibited glandular configuration and nesting pattern of tumor cell arrangement. These cases were diagnosed as Adenocarcinoma-NOS and required IHC for subtyping.

On immunohistochemistry, Napsin A was the most specific markers positive in 100% (3/3) of cases. PAX8 and p53 were expressed in 100% (3/3) cases, however WT1 was negative in all the cases. (Table 11)

TABLE 11: Immunohistochemistry findings of clear cell carcinoma ovary (n=3)

IHC MARKER	NO OF CASES(n=3)	PERCENTAGE
NAPSIN A	3(3)	100%
PAX8	3(3)	100%
p53	3(3)	100%
WT1	0(3)	0%

Endometrium

Out of 54 cases of female genital tract, 40.8% (22/54) arose from endometrium and it was the second most common site of carcinomas involving female genital tract. Mean age of presentation was 53.2 years with most common age group affected being 51-60 years. Majority of the patients were in postmenopausal age group (>50 years).

Subtypes of Carcinoma Endometrium

Out of 22 cases of endometrial carcinomas majority were endometroid adenocarcinomas (81.8%, 18/22) followed by serous carcinomas (18.2%, 4/22).

IHC diagnostic panel for carcinoma endometrium included ER, p16, p53, Napsin A, Vimentin.

Endometroid adenocarcinoma

Endometroid adenocarcinomas was diagnosed in 81.8% (18/22) of cases involving endometrium. Mean age of presentation was 57.2 years. Majority of them were postmenopausal females (>50 years) (77.7%,14/18).

On IHC, diffuse and strong nuclear expression of ER was observed in 100% (18/18) of cases and was the most specific. p53 was positive in 25% (3/12) of cases and P16 was focal weak positive in 81.8% (9/11) of cases. While Napsin A and WT1 were negative in all the cases. (Table 12)

TABLE 12: Immunohistochemistry findings of Endometroid carcinoma

IHC MARKER	NO OF POSITIVE CASES(n=18)	PERCENTAGE
ER	18(18)	100%
p53	3(12)	25%
p16	9(11)	81.8%
NAPSIN A	0(18)	0%
WT1	0(18)	0%

Serous carcinoma endometrium

Serous carcinoma was diagnosed in 18.2% (4/22) cases of endometrial carcinomas. All the patients were between the age group of 61-70 years with mean age of 64.6 years.

Histopathology examination revealed papillae, glands and nest were the predominant pattern of tumor cell arrangement.

On IHC, p53 was strong and diffuse nuclear positive and PAX 8 was focal weak nuclear positive in 100% (4/4) cases. Also p16 was focal weak positive in 100% (4/4) of cases, ER was focal positive in 75% (3/4) of cases and WT1 was positive in 25% (1/4) of cases. Napsin A was negative in all the cases. (Table 13)

TABLE 13: Immunohistochemistry findings of Serous carcinoma endometrium (n=4)

IHC MARKER	NO OF CASES (n=4)	PERCENTAGE
p53	4(4)	100%
p16	4(4)	100%
ER	3(4)	75%
PAX8	4(4)	100%
WT1	1(4)	25%
NAPSIN A	0(4)	0%

Cervix

Carcinoma cervix was diagnosed in 11% (6/54) of total cases of female genital tract. Mean age of presentation was 52 years with most common age group affected being 51-60 years. Most of the patients were in postmenopausal age group (>50years).

Subtypes of Carcinoma Cervix

Most common subtype of carcinoma cervix was HPV associated squamous cell carcinoma (3/6, 50%) followed by adenosquamous carcinoma (2/6, 33.3%) and adenocarcinoma (1/6, 16.7%).

IHC diagnostic panel for primary carcinoma cervix included CK5/6, p63, PAX8, p16, WT1 and ER.

HPV associated non keratinizing squamous cell carcinoma

HPV associated non keratinizing squamous cell carcinomas were the most common subtype of carcinoma cervix constituted 50% (3/6) of cases. Mean age of presentation was 54.6 years with age range of 51-60 years.

Histopathology examination exhibited nests and sheets as predominant pattern of tumor cell without any individual cell keratinization.

On IHC, CK5/6, p63, p16 were most specific markers which were diffusely expressed in 100% (3/3) cases. ER and PAX8 were negative.(Table 14).

TABLE 14: Immunohistochemistry of HPV associated non keratinizing squamous cell carcinoma (n=3)

IHC MARKER	NO OF CASES (n=3)	PERCENTAGE
CK5/6	3(3)	100%
p63	3(3)	100%
p16	3(3)	100%
ER	0(2)	0%
PAX8	0(2)	0%

Adenosquamous carcinoma

Adenosquamous carcinoma was diagnosed in 33.3% (2/6) of total cases of carcinoma cervix. Both the patients were postmenopausal females (52 years and 69 years).

Histopathological examination of both the cases revealed biphasic pattern of tumor morphology with well defined glandular component and poorly differentiated squamous component.

On IHC, CK 7 was positive in glandular component and CK5/6 was positive in squamous component in both the cases (100%, 2/2). Diffuse p63 and p16 positivity was seen in 100% (2/2) of cases.

Endocervical adenocarcinoma

A postmenopausal women of 60 year age diagnosed as endocervical adenocarcinomas which on histomorphological examination showed glandular configuration of tumor cell arrangement with high grade atypia.

On IHC, these tumor cells were diffuse and strongly nuclear positive for p16 and CK7 and negative for ER, CK5/6, p63, W1 and Napsin A.

MALE GENITAL TRACT

Prostatic adenocarcinoma was the predominant type, constituted 4.9% (15/302) of total cases of carcinomas.

Adenocarcinoma prostate

Mean age of involvement was 67.1 years with most common age group involved being 61-70 years.

IHC diagnostic panel for prostatic adenocarcinoma included HMWCK, p63, AMACR, CK5/6 to differentiate them from benign glands.

On IHC, AMACR and PSA (4/4) were most specific expressed in 100% cases in neoplastic glands. HMWCK, p63, CK5/6 were not highlighting the basal layer of the neoplastic glands of 100% of the cases. (Table:16)

TABLE 15: Immunohistochemical findings in adenocarcinoma prostate (n=15)

IHC MARKER	NO OF CASES (n=15)	PERCENTAGE
AMACR	15(15)	100%
HMWCK	0(15)	0%
p63	0(15)	0%
CK5/6	0(7)	0%
PSA	4(4)	100%

URINARY SYSTEM

Out of 201 cases of primary carcinomas, urinary system constituted 4.3% (13/302) of total cases of carcinoma arising from kidney and urinary bladder. Mean age of involvement was 54.7 years and the most common age group affected was 51-60 years. Males were more commonly affected with M:F ratio of 5.5:1.

Site distribution of carcinoma in urinary system

Out of 13 cases of carcinomas arising from urinary system, majority were from urinary bladder (61.5%, 8/13) followed by kidney (38.5%, 5/13).

Urinary Bladder

Carcinoma Urinary bladder was diagnosed 61.5% (8/13) of total cases. Most common subtype of primary carcinoma urinary bladder was urothelial carcinoma (87.5%, 7/8) followed by squamous cell carcinoma (12.5%, 1/8).

Urothelial carcinoma

Urothelial carcinomas was diagnosed in 87.5% (7/8) of total cases of urinary system. All were male patients with mean age of involvement being 65.5 years.

Histopathological examination showed papillary configuration and nesting arrangement of tumor cells.

On IHC, tumor cells were positive for p63, GATA3, Uroplakin in 100%, 85.7% and 75% of the cases respectively. One case which was negative for uroplakin was having a high grade morphology and was positive for p63, GATA3 and negative for PSA. (Table 16)

TABLE 16: Immunohistochemical findings of Urothelial carcinoma (n=7)

IHC MARKER	NO OF CASES (n=7)	PERCENTAGE
p63	7(7)	100%
GATA3	6(7)	85.7%
UROPLAKIN	3(4)	75%
PAX8	0(2)	0%

Squamous cell carcinoma

A 60 year old male diagnosed as squamous cell carcinoma urinary bladder as histopathology revealed nesting and sheeting pattern of tumor cells arrangement with individual cell keratinization. On IHC, tumor cells expressed CK5/6 and p63 and were negative for GATA3, PSA, CK7.

Kidney

Renal cell carcinomas was diagnosed in 38.5% (5/13) of total cases of urinary system. All were male patients with mean age affected being 65 years with age range of 61-70 years.

Clear cell carcinoma were observed in majority of the cases (80% ,4/5) followed by chromophobe renal cell carcinoma (20%, 1/5).

IHC diagnostic panel for renal cell carcinoma included CD10, vimentin, PAX8, CD117, AMACR, RCC.

Clear cell renal cell carcinoma

On IHC, CD10, Vimentin were expressed in tumor cells of 100% (4/4) cases, PAX8 was also positive in 100% (2/2) of the cases. All these cases were negative for CK7. RCC was done on one case which showed cytoplasmic positivity. (Table 17)

TABLE 17: Immunohistochemistry findings of clear cell renal cell carcinoma (n=4)

IHC MARKER	NO OF CASES (n=4)	PERCENTAGE
CD10	4(4)	100%
VIMENTIN	4(4)	100%
PAX8	2(2)	100%
RCC	1(1)	100%
CK7	0(4)	0%

Chromophobe renal cell carcinoma

A 60 year old female was diagnosed as Chromophobe renal cell carcinoma, which on immunohistochemistry expressed CD117, EMA, AMACR and CK7, however tumor cells were negative for vimentin and CD10.

LOWER GASTROINTESTINAL TRACT

Of the total 302 cases, 8,9% (18/201) of carcinomas were arose from lower gastrointestinal tract. Mean age of involvement was 47.2 years and most common age group affected was 41-50 years. Both males and females were equally affected with M:F ratio of 1:1.

Adenocarcinoma was the most common subtype (82%, 15/18) followed by signet ring cell carcinoma (12%, 2/18) and squamous cell carcinoma arising from anal canal (6%,1/18).

Histopathology examination revealed that tumor cells arranged predominantly in glandular configuration. However, 12% (2/18) of cases showed singly scattered signet ring cells having large tumor cells with eccentrically placed hyperchromatic nuclei and abundant amount of clear cytoplasm.

On IHC, CDX2 and SATB2 were the most specific marker expressed in 100% (17/17) of cases. CK20 was positive in 91.6% (11/12) of cases

and CEA was positive in 100% (5/5) of cases. CK7 was negative in all the cases. (Table 18)

TABLE 18: Immunohistochemical findings of colorectal adenocarcinoma (n=17)

IHC MARKER	NO OF CASES(n=17)	PERCENTAGE
CDX2	17(17)	100%
SATB2	8(8)	100%
CEA	5(5)	100%
CK20	11(12)	91.6%
CK7	0(12)	0%

Squamous cell carcinoma anal canal

A single case of squamous cell carcinoma of anal canal seen in present study showed poorly differentiated morphology with CK5/6 and p63 expression, however it was negative for CDX2, CK7, CK20 on immunohistochemistry.

UPPER GASTROINTESTINAL TRACT

Mean age of involvement was 54.7 years with most common age affected was 51-60 years. Males were more commonly with M:F ratio of 2.5:1.

Stomach

Gastric carcinomas comprised 50% (7/14) of total upper gastrointestinal tract carcinomas, majority of which were signet ring cell carcinoma (57%, 4/7) followed by gastric adenocarcinoma (29%, 2/7) and squamous cell carcinoma of gastroesophageal junction (14%,1/7).

Gastric adenocarcinoma

Males were more commonly involved comprising 66.7% (4/6) of total cases with M:F ratio of 2:1.

On histopathological examination, Signet ring cell carcinoma were the most predominant subtype (66.7%; 4/6) seen as singly scattered cells having eccentrically placed hyperchromatic nuclei and abundant

amount of vacuolated cytoplasm. Also glandular configuration was seen in 33.3% (2/6) cases of gastric adenocarcinomas.

On IHC, Her 2 Neu, CK7 and CDX2 were expressed in 100%, 83.3% and 67% respectively. CK20 expression was seen only in 16.7% (1/6). E-Cadherin was done on one case which showed membranous positivity in tumor cells. (Table 19)

TABLE 19: Imunohistochemical findings of gastric adenocarcinoma (n=6)

IHC MARKER	NO OF CASES (n=6)	PERCENTAGE
CK7	5(6)	83.3%
CK20	1(6)	16.7%
CDX2	4(6)	66.6%
CEA	1(1)	100%
HER 2 NEU (2+)	4(4)	100%
E CADHERIN	1(1)	100%

Squamous cell carcinoma gastroesophageal junction

A 70 years old male was diagnosed as squamous cell carcinoma of gastroesophageal junction with histopathology showing nesting and sheeting pattern and IHC exhibiting CK5/6 and p63 positivity, however negative for CK7, CK20, CEA, CDX2.

Esophagus

Esophageal carcinoma was diagnosed in 50% (7/14) of total cases of upper gastrointestinal tract. Mean age of involvement was 58 years of age with age range of 51-60 years. Males were mainly affected with M:F ratio of 2.5:1. Squamous cell carcinoma esophagus was predominant subtype comprising 85.7% (6/7) of total cases followed by adenocarcinoma 14.3% (1/7) of total cases.

On histomorphological examination, nesting and sheeting patterns of tumor cell were predominant. However, only 28.6% (2/7) cases had individual cell keratinisation and thus classified as squamous cell carcinoma esopahgus.

Squamous cell carcinoma esophagus

Squamous cell carcinoma esophagus was diagnosed in 85.7% (6/7) of total cases. Males were more commonly involved comprising 66.7% (4/6) of total cases with M:F ratio of 2:1.

On IHC, CK5/6 and p63 were expressed in 100% (6/6) cases where as CK7 was expressed in only 50% (2/4) of total cases and CDX2, CEA, CK20 were negative in all the cases. (Table 20)

TABLE 20: Immunohistochemical findings of squamous cell carcinoma esophagus (n=6)

IHC MARKER	NO OF CASES(n=6)	PERCENTAGE
CK5/6	6(6)	100%
p63	6(6)	100%
CDX2	0(2)	0%
CEA	0(1)	0%
CK7	2(4)	25%
CK20	0(4)	0%

Adenocarcinoma esophagus

A 67 year old male was diagnosed as adenocarcinoma esophagus on histopathology revealed nesting and sheeting pattern and immunohistochemistry showed expression of CK20 and focal CDX2 positive, however it was negative for CK7, CK5/6 and p63.

PANCREAS

Ductal pancreatic adenocarcinomas were diagnosed in 7% (14/201) of total cases of primary carcinomas.

Mean age affected was 64.8 years with age range of 61-70 years. Males were more with M:F ratio of 1.3:1.

Histopathology examination revealed that 100% (14/14) cases were showing prominent glandular configuration of tumor cells surrounded by a desmoplastic stroma.

On immunohistochemistry, CK7 and CEA was positive in 100% (14/14) of cases. CDX2 was positive in 30% (3/10) of cases. CK20 was negative in 100% of the cases. (Table 21)

TABLE 21: Immunohistochemical findings of ductal adenocarcinoma (n=14)

IHC MARKERS	**NO OF CASES (n=14)**	**PERCENTAGE**
CK7	14(14)	100%
CK20	0(14)	0%
CEA	14(14)	100%
CDX2	3(10)	30%

LIVER

Of 201 cases of carcinomas, hepatocellular carcinomas was diagnosed in 4.5% (9) of the cases.

Hepatocellular carcinoma

Males were predominantly affected with M:F ratio of 3.5:1. Mean age of presentation was 65.2 years with age group of 61-70 years.

Histopathology examination showed predominant trabecular pattern of tumor cell arrangement and 22% (2/9) cases exhibited poorly differentiated morphology with abnormal reticulin network.

IHC diagnostic panel for hepatocellular carcinoma included HepPar-1, Glypican-3, CD34, CD10 and CEA.

On immunohistochemistry, HepPar-1 and Glypican-3 were most sensitive expressed in 100% (9/9) of the cases. CEA showed

canalicular staining pattern in 75% (3/4) and 25% (1/4) showed cytoplasmic positivity. CD34 were positive in the endothelial cells lining the sinusoids seen in 75% (3/4) of the cases. (Table 22). PAX8, TTF-1, PSA and neuroendocrine markers were negative.

CK7-/CK20- pattern was seen in 88.9% (8/9) cases and CK7+/CK20- pattern was seen in 11.1% (1/9) cases of hepatocellular carcinoma.

TABLE 22: Immunohistochemistry of hepatocellular carcinoma (n=9)

IHC MARKER	NO OF CASES (n=9)	PERCENTAGE
HEPPAR 1	9(9)	100%
GLYPICAN 3	3(3)	100%
CEA	4(4)	100%
CD34	3(4)	75%
CDX2	3(3)	100%

HEAD AND NECK

Out of 201 cases of primary carcinomas, head and neck region constituted 3.0% (6/201) of cases of carcinoma which were arising from salivary gland and nasopharynx. Mean age of involvement was 68 years with most common age affected was 61-70 years. Males were more commonly affected with M:F ratio of 5:1.

Nasopharynx

Out of six cases of carcinomas arising from head and neck region, nasopharyngeal carcinomas was diagnosed in 66.7% (4/6). Mean age of involvement was 65.2 years with age range of 61-70 years.

On IHC, tumor cells were positive for CK5/6 and p63 in 100% (4/4) of the cases. LCA, chromogranin and synaptophysin were negative in all the cases. (Table 23)

TABLE 23: Immunohistochemistry of squamous cell carcinoma Nasopharynx (n=4)

IHC MARKER	NO OF CASES (n=4)	PERCENTAGE
CK5/6	4(4)	100%
p63	4(4)	100%
LCA	0(4)	0%
CHROMOGRANIN	0(4)	0%
SYNAPTOPHYSIN	0(4)	0%

Salivary gland

High grade adenoid cystic carcinoma was diagnosed in 33.3% (2/6) of total cases of head and neck region. Both were male patients (55 years and 70 years).

High grade adenoid cystic carcinoma

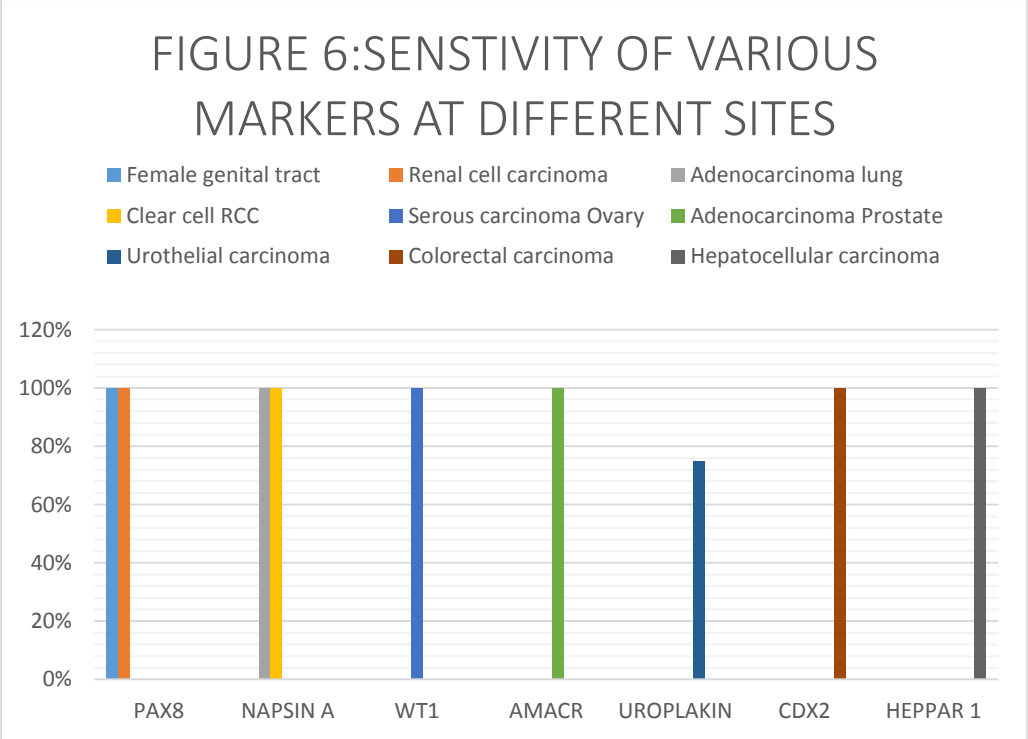
On IHC, in both the cases of high grade adenoid cystic carcinoma EMA and CK7 were highlighting the ductal luminal cells. p63 and CK5/6 were highlighting the myoepithelial cells in 100% (2/2) of the cases. Also CD117 was positive in 100% (2/2) of the cases. (Table 24)

TABLE 24: Immunohistochemistry of high grade adenoid cystic carcinoma (n=2)

IHC MARKER	NO OF CASES (n=2)	PERCENTAGE
CK7	2(2)	100%
p63	2(2)	100%
EMA	2(2)	100%
CK5/6	2(2)	100%
CD117	2(2)	100%

Sensitivity of various markers at different sites

On analysing various markers, 100% sensitivity was observed for PAX8, Napsin A, WT1, AMACR, Uroplakin, CDX2, HepPar-1 for carcinomas arising from different sites. (Figure 6)



DISCUSSION

Immunohistochemistry (IHC) is an extraordinarily powerful tool in diagnostic surgical pathology. It is an efficient and cost-effective approach to identify site of origin in metastatic carcinomatous deposits and in subtyping of primary carcinomas. It is accessible to most pathologists and can be performed on relatively limited amounts of formalin-fixed paraffin embedded tissue. The lineage-specific transcription factors have proven to be particularly sensitive and specific markers, even in many cases of histologically poorly differentiated carcinomas. Incidence rates, gender and location of lesions all strongly influence the overall positive predictive value of antibodies.

Present study was a two and half years study (one year retrospective and one and half year prospective). All the biopsies in which diagnosis of carcinoma was made and immunohistochemistry was done to reach a definite diagnosis were included in this study (excluding neuroendocrine carcinomas and breast carcinomas in which IHC was done for molecular classification of breast carcinomas).

There were a total of 302 cases on which immunohistochemistry was performed, out of which 66% of total cases were primary carcinomas and secondary carcinomas (metastatic carcinomatous deposits) constituted 34% of the total cases.

The IHC pattern is considered diagnostic, demonstrating nuclear, membranous or cytoplasmic patterns. IHC is often used in situations where a presence or absence of certain proteins can form a basis for a diagnosis. (Table 25)

TABLE 25: Positivity of various markers used in study

IHC MARKER	TYPE OF POSITIVITY
CK (AE1/AE3)	CYTOPLASMIC
CK7	CYTOPLASMIC
CK20	CYTOPLASMIC
CK5/6	CYTOPLASMIC
CEA	CYTOPLASMIC
TTF1	NUCLEAR
P40	NUCLEAR
P63	NUCLEAR
NAPSIN A	CYTOPLASMIC
PAX8	NUCLEAR
WT1	NUCLEAR
ER	NUCLEAR
P16	NUCLEAR & CYTOPLASMIC
CDX 2	NUCLEAR
SATB 2	NUCLEAR
HEPPAR 1	CYTOPLASMIC
GLYPICAN 3	CYTOPLASMIC
UROPLAKIN	MEMBRANOUS
CD10	MEMBRANOUS & CYTOPLASMIC
GATA 3	NUCLEAR
RCC	CYTOPLASMIC & MEMBRANOUS
VIMENTIN	CYTOPLASMIC
AMACR	CYTOPLASMIC
HMWCK	CYTOPLASMIC
P53	NUCLEAR
CHROMOGRANIN	CYTOPLASMIC
SYNAPTOPHYSIN	CYTOPLASMIC

METASTATIC CARCINOMATOUS DEPOSITS

It is often important to determine the site of origin of metastatic carcinomatous deposits, particularly because this can affect the choice of treatment. Determination of primary site may take several steps which includes correlation with clinical history, radiology, age and gender. The organ of metastasis may give a first indication to the primary site. The diverse and unique expression of CK7 and CK20 in carcinomas singly or in combination have been found to be useful to differentiate carcinomas of epithelial origin.

CK7 positive in epithelial neoplasms

The vast majority of cases which were positive for CK7 included adenocarcinoma lung (100%) , serous carcinoma ovary (100%), urothelial carcinoma (100%), squamous cell carcinoma lung (50%), gastric adenocarcinomas (100%), pancreaticobiliary system (100%). Tot T et al [68], Loy TS et al [69] and Wauters CC et al [70] also reported similar results.

CK20 positive in epithelial neoplasms

CK20 was diffuse cytoplasmic positive in colorectal adenocarcinomas. Other tumor types included pancreaticobiliary type (45%), gastric adenocarcinomas (7.7%), serous carcinoma ovary (18.8%), urothelial carcinomas (25%).These findings were concordant with Ascoli V et al[71] and Tot T et al [68].

CK7/CK20 combined expression in epithelial neoplasms

The diverse and unique combined expression of CK7 and CK20 on carcinomas has been found to be useful in diagnosis. In different studies done by Chu et al and Wang et al showed that different expression pattern of CK7 and CK 20 are among the most discriminant markers. After analysing combined expression of both, maximum number of cases were falling into CK7+/CK20- group in our study (66/101) which was concordant with study done by Chu et al [13] (207/435) and Wang et al [72] (116/241) followed by CK7+/CK20+, CK7-/CK20- and CK7-/CK20+. (Table 26)

TABLE 26: CK7/CK20 profile of Metastatic carcinomatous deposits

STUDY	CK7+/CK20-	CK7+/CK20+	CK7-/CK20+	CK7-/CK20-
Present study (n=101)	66	16	09	10
Chu et al [13] (n=435)	207	24	34	171
Wang et al [72] (n=241)	116	65	50	10

CK7+/CK20- epithelial neoplasms

The majority of the cases in this category were from gastrointestinal tract (92.3%), adenocarcinoma lung (100%), serous carcinoma ovary (81.3%), urothelial carcinoma (75%) and squamous cell carcinoma lung (50%).

For comparison the results of present study were compared with studies done by author Chu et al [13] and Wang et al [72] are summarised in Table 27.

One notable difference was seen in CK7+/CK20- expression pattern of urothelial carcinoma, which showed much lower CK20 expression in urothelial carcinomas in present study. CK 20 positivity in urothelial carcinoma was 25% in present study versus 89% in Wang et al [72]. It was found that well differentiated urothelial carcinomas were more likely to be CK20 positive than poorly differentiated urothelial carcinomas, thus the difference might be due to selection of cases with different degree of differentiation.

CK7+/CK20+ epithelial neoplasms

The cases falling in this category were from upper gastrointestinal tract (7.7%), serous carcinoma ovary (18.8%), urothelial carcinoma (25%).

CK20 positivity in serous carcinoma ovary was much higher in our study as compared with study done by authors Chu et al [13] and Wang

et al [72] which showed positivity in 4% and 0% cases respectively. However our findings are concordant with study done by Goldstein NS et al [73] and Roland M et al [74] which showed CK20 positivity in 21% of cases.

Results for CK20 reactivity in ovarian serous carcinoma in other studies are split. Some have reported focal CK20 reactivity in a minority of ovarian serous carcinomas and some have noted no reactivity. The difference in CK20 staining might be due to variation in cut off range for positivity in different studies. In our study the cut off for positive interpretation was in more than 20% of the neoplastic cells and in other studies it was taken as positive in more than 50% of tumor cells.

For adenocarcinomas of the upper gastrointestinal tract, we found the great majority to express both CK7 and CK20. These results are in contrast to other studies that have found that more cases falling in CK7+/CK20+ category. This varied pattern of immunoexpression might be attributed to smaller numbers of patients in present study and also high proportion of gastric adenocarcinomas were poorly differentiated in our data which can have loss of CK20 immunostaining. Al Kende et al [75] observed similar findings.

CK7-/CK20- epithelial neoplasms

The cases falling in this category were from adenocarcinoma prostate (100%), clear cell renal cell carcinoma (100%), squamous cell carcinoma lung (50%). When carcinoma is CK7-/CK20-, the differential diagnosis should include prostate, renal cell carcinoma, hepatocellular carcinoma and squamous cell carcinomas lung. The results were compared with study done by Chu et al [13] and Wang et al [72]. (Table 27)

When we examined coordinate expression of CK7 and CK20 there was some difference in CK7-/CK20- expression in prostatic adenocarcinoma. Wang et al [72] found 62% were negative for both markers, whereas we observed this in 100% cases. However, they

examined 13 cases where as we studied CK7-/CK20- expression in 4 cases only. So the difference in observations was might be due to less number of cases in our study and other reason could be due to difference in degree of differentiation in carcinomas in both the studies, as all the cases in our study were low grade prostatic adenocarcinomas. Recently, Bassily NH et al [76] reported similar expression of CK7 and CK20 in prostate carcinomas. They described CK7 positivity in 19% of prostate adenocarcinomas and all with Gleason score >6.

CK7-/CK20+ epithelial neoplasms

This expression pattern was seen in majority of the cases of colorectal adenocarcinomas and one third of gastric adenocarcinomas. In our study 100% cases of colorectal adenocarcinomas were CK7-/CK20+, which were concordant with study done by Chu et al [13] and Wang et al [72] who showed similar results. (Table 27)

TABLE 27: Histologic distribution of CK7 and CK20 in Epithelial neoplasms

Tumor subtype	CK7/CK20 profile	Present study	Chu et al [13]	Wang et al [72]
Urothelial carcinoma	CK7+/CK20- CK7+/CK20+	3/4 (75%) 1/4(25%)	15/24 (63%) 6/24 (25%)	2/19 (11%) 17/19 (89%)
Colorectal carcinoma	CK7-/CK20+	9/9 (100%)	19/20 (95%)	30/40 (75%)
Renal cell carcinoma	CK7-/CK20-	4/4 (100%)	17/19 (89%)	12/17 (71%)
Cholangiocarcinoma	CK7+/CK20-	6/6 (100%)	7/14 (50%)	-
Squamous cell carcinoma Lung	CK7+/CK20- CK7-/CK20-	2/4 (50%) 2/4 (50%)	7/15 (47%) 8/15 (53%)	1/12 (8%) 11/12 (89%)
Adenocarcinoma Lung	CK7+/CK20-	18/18 (100%)	9/10 (90%)	-
Serous carcinoma Ovary	CK7+/CK20- CK7+/CK20+	13/16 (81.3%) 3/16 (18.8%)	23/24 (96%) 1/24 (4%)	19/19 (100%) 0/19 (0%)
Pancreatic Adenocarcinoma	CK7+/CK20- CK7+/CK20+	11/20 (55%) 9/20 (45%)	4/13 (30%) 8/13 (62%)	6/23 (26%) 15/23 (65%)
Prostatic Adenocarcinoma	CK7-/CK20-	4/4 (100%)	18/18 (100%)	8/13 (62%)
Gastric Adenocarcinoma	CK7+/CK20+ CK7+/CK20-	1/13 (7.7%) 12/13 (92.3%)	1/8 (13%) 2/8 (25%)	11/29 (38%) 5/29 (17%)

Lung Carcinoma

Lung carcinomas were in majority (28.8%) of all the primary epithelial tumors. Adenocarcinomas were most common subtype (58.6%) followed by squamous cell carcinoma (41.4%). Similar findings were observed by Krishnamurthy et al [77] and Norohana et al [78] who concluded 42.6% and 40.3% adenocarcinomas and 16% and 24.1% squamous cell carcinomas respectively.

We observed that TTF-1 and Napsin A were positive in 100% of the cases of adenocarcinoma lung. Johansson et al. [79], Xu XY et al.[80] reported 100% and 94.6% positivity for TTF-1 respectively. Kim et al [81] also reported 78% positivity for TTF-1 and 81% positivity for Napsin A.

p63 was positive in 33% of squamous cell carcinoma lung cases in present study which was concordant with Rekhtman et al [3] and Pelosi et al [82] as they reported positivity of 32% and 46.7% respectively. (Table 28)

Squamous cell carcinomas lung showed 79% positivity for CK5/6, 93% positivity for p63 and 100% positive for p40.

Similar studies conducted by Xu XY et al [80], Johansson et al [79], Rekhtman et al [3], Kim et al [81] and Pelosi et al [82] reported positivity ranging from 90% to 100% for CK5/6 and p63 both.

More recently p40 has been shown to be an excellent marker for squamous differentiation, equivalent to p63 in sensitivity for squamous cell carcinoma, but it is markedly superior to p63 in specificity. In our study p40 was 100% sensitive for squamous cell carcinomas lung. (Table 28)

TABLE 28: Positivity of markers in primary lung carcinomas in various studies

STUDY	Adenocarcinoma lung			Squamous cell carcinoma lung			
	TTF1	NAPSIN A	p63	TTF1	CK5/6	p63	p40
Present study (n=58)	100%	100%	33%	0%	79%	93%	100%
Johansson et al [79] (n=158)	100%	-	-	0%	100%	90%	-
Xu XY et al [80] (n=200)	94.6%	-	-	0%	91.9%	97%	-
Rekhtman et al [3] (n=315)	89%	-	32%	3.5%	97.8%	100%	-
Kim et al [81] (n=129)	78%	81%	-	2%	90%	91%	-
Pelosi et al [82] (n=40)	-	-	46.7%	0%	100%	100%	-

Female genital tract

Ovaries were the most common site involved among female genital tract followed by endometrium and cervix.

Among all the primary epithelial ovarian tumors high grade serous carcinomas were the majority constituting 46.2% followed by mucinous carcinoma (27%), endometroid carcinoma (15.4%) and clear cell carcinoma (11.5%).

Ovary

We observed PAX8 expression in 100% cases of all the primary epithelial tumors of ovary. Lilac et al.[83] studied that PAX8 expression was observed in 94% serous carcinoma, 31% mucinous carcinomas,

100% endometroid carcinomas and 100% clear cell carcinomas. (Table 29)

TABLE 29: PAX 8 expression in ovarian tumors in various studies

Study	Serous carcinoma	Mucinous carcinoma	Endometroid carcinoma	Clear cell carcinoma
Present study (n=26)	100%	57.1%	100%	100%
Lilac et al [83] (n=95)	94%	31%	100%	100%
Ozcan A et al [84] (n=357)	99%	40%	93%	100%
Tacha D et al [85] (n=229)	93%	50%	83%	100%
Tong Gx et al [86] (n=60)	87.5%	0%	80%	100%
Laury et al [87] (n=60)	99%	40%	92%	100%
Nonaka et al [88] (n=124)	96.4%	8.3%	88.9%	100%

WT1 is reported to be consistently positive in serous carcinomas, including a significant number of high grade serous carcinomas ovary with sensitivity ranging from 89% to 97% in different studies Lilac et al[83], Hylander B et al [89], Al-Hussaini et al [90], Acs G et al [91]). In present study, WT1 expression was observed in 100% cases of high grade serous carcinoma. (Table 30)

TABLE 30: WT1 expression in ovarian tumors in various studies

Study	Serous carcinoma	Mucinous carcinoma	Endometroid carcinoma	Clear cell carcinoma
Present study (n=26)	100%	0%	0%	0%
Lilac et al [83] (n=95)	96.15%	7.69%	40%	50%
Hylander B et al [89] (n=100)	89.18%	3%	0%	4%
Al-Hussaini et al [90] (n=91)	94.7%	-	0%	-
Acs G et al [91] (n=140)	90%	0%	0%	22.2%

Napsin A had been found to be another sensitive and specific marker for diagnosing clear cell carcinomas ovary. In present study Napsin A immunoexpression in three cases of clear cell carcinoma ovary was found to be 100% which was comparable with observations made by Rekhi et al [92], Iwamoto et al [93], Li Q et al [94] and Sayar et al [95] . They reported Napsin A expression ranging between 82% to 100% of the cases. All the above author studies also concluded that high grade serous carcinoma ovary was negative for Napsin A as observed in present study. (Table 31)

TABLE 31: Napsin A expression in high grade serous carcinoma and clear cell carcinoma ovary

Study	High grade serous carcinoma	Clear cell carcinoma
Present study	0%	100%
Rekhi et al [92] (n=127)	0%	100%
Iwamoto et al [93] (n=36)	0%	95.5%
Li Q et al [94] (n=86)	0%	97.4%
Sayar et al [95] (n=131)	0%	82%

Endometrium

Endometrial adenocarcinoma is a common gynaecological malignancy. There are different patterns for molecular alterations in Type I and type II endometrial carcinomas, therefore accurate diagnosis of tumor type in endometrial biopsy specimen is critical for patient management.

We observed that majority of the cases of endometrial carcinomas were of endometroid adenocarcinomas constituting 81.8% of total endometrial biopsies. A battery of IHC stains which included ER, p53, p16, were done to reach a final diagnosis.

Similar findings were observed by Netzer et al [96] and Yemelyanova et al [97] which showed that diffuse immunoreactivity for p16 was seen in

70 to 90% of endometroid carcinomas and 36 to 38% of endometrial serous carcinoma. Our study demonstrated weak staining for p16 in 81.8% of the cases of endometroid carcinoma.

ER was diffuse strong positive in 100% cases of endometroid carcinoma. Similar results were obtained by Shen F et al [98] and Caifeng Wang et al [99] who reported strong diffuse ER expression in 80% and 95% of endometroid adenocarcinomas respectively.

Abberent P53 expression is specific for endometrial serous carcinomas. The pattern of expression is important while evaluating the immunoreactivity using a cutoff of greater than 70% expression and 0% expression. We observed that 100% cases of endometrial serous carcinomas were showing diffuse strong (abnormal pattern) positivity in >70% of tumor cells. Our findings were consistent with Yemelyanova et al [97], Darvishian F et al [100], Gilks CB et al [101], Egan JA et al [102] who reported abnormal pattern of expression in 80 to 90% of the cases. Only 25% of endometroid carcinoma showed positivity for P53 and all of them were FIGO grade3 which was concordent with studies done by Garg K et al [103] and McCluggage et al [104] who observed P53 expression in 10% of cases and all of them were FIGO grade3.

Cervix

CK5/6, p63, p40 and CK7 are the main biomarker to differentiate cervical adenocarcinoma from squamous cell carcinoma. CK5/6 has a high sensitivity in diagnosing squamous cell carcinoma of cervix. In our study CK5/6 was positive in 100% of the cases which were comparable to the results obtained by Lesnikova I et al [105] and Goncalves et al [106] as they reported CK5/6 positivity in 95% and 93% of the cases respectively. p63 was positive in 100% of cases in our study, Goncalves et al [106] also obtained similar results with sensitivity of 95% for p63.

Protein p16 is a surrogate marker for to know association of cervical squamous cell carcinomas with HPV infection. Expression is related to the degree of histological dysplasia. In our study p16 overexpression

had been demonstrated in cervical carcinoma as a result of functional inactivation of RB by the HPV E7 protein hence 100% cases were HPV associated squamous cell carcinoma. Similar results were obtained by Lesnikova I et al [105] who reported 98.5% positivity in invasive squamous cell carcinoma and Goncalves et al [106] also showed that p16 appears to be sensitive marker of high risk oncogenic HPV infection.

Prostatic Adenocarcinoma

Immunohistochemistry is widely used to distinguish prostatic carcinomas from atrophic prostate and its benign mimickers. In our study diagnostic panel included basal markers p63, HMWCK, CK5/6 and also over expression of alpha- methyl coenzyme A racemose (AMACR) in prostatic carcinomas. Basal markers were negative and AMACR was strong positive in all the cases of prostatic adenocarcinomas.

TABLE 32: Positivity of markers in Prostatic adenocarcinoma in different studies

IHC marker	Present study (n=15)	Oh WJ, et al [59] (n=111)	Chuang AY et al [107] (n=38)	Kunju et al [108] (n=42)
AMACR	100%	66.7%	-	88.1%
HMWCK	0%	0.8%	7.9%	2.4%
p63	0%	0%	0%	0%
PSA	100%	100%	97.4%	95.2%

We observed that AMACR was expressed in 100% of cases of prostatic adenocarcinomas which showed variation according to a study conducted by Oh WJ et al.[59] who reported a sensitivity of 66.7% which might have been attributed to poorly differentiated prostatic adenocarcinomas. Kunju et al [108] also reported a positivity of 88.1% for AMACR in prostatic adenocarcinomas. After evaluating the positivity of PSA, HMWCK, CK5/6, p63, it was found to be similar with

the observations made by Oh WJ et al [56], Chuang et al [107] and Kunju et al [108]. (Table 32)

Urinary system

The most common type of renal cell carcinoma is clear cell renal cell carcinoma. Because of the occasional morphological overlap among different subtypes, IHC may be necessary in these cases to arrive at a diagnosis especially in limited tissue evaluation.

We observed that CD10 was strongly positive in 100% cases of clear cell renal cell carcinoma. Similar observations were made by Mazal et al [109], Kim MK et al [110] and Avery AK et al [40] who studied expression in 85%, 92% and 95% of cases of renal cell carcinoma respectively. Vimentin expression was seen in 100% cases of clear cell RCC and 0% cases of chromophobe RCC in present study, which was similar to study done by Skinnider et al [111], Taki A et al [112], Bonsib SM et al [113] who observed expression in 87% of clear cell carcinoma and only 7% of chromophobe renal cell carcinoma.

Another useful marker was RCC, which was seen in 100% cases of clear cell carcinoma in our study. These findings were concordant with Shen et al [39] as they observed positivity in 86% cases of clear cell RCC. Other studies Avery et al [40], Wang HY et al [114], McGregor DK et al [115] concluded expression of RCC in majority of clear cell carcinomas.

AMACR is also a marker for potential use in differential diagnosis of renal cell neoplasm. AMACR was positive in chromophobe RCC in our study which is similar to observation made by Tretiakova MS et al [116] which showed strong expression in 100% cases of chromophobe RCC. Also PAX8 expression is seen in 100% cases of clear cell RCC in our study which was concordant with Guo-Xia Tong et al [117] who showed 98% cases of clear cell RCC to be positive for PAX8.

Carcinoma bladder can present with a broad spectrum of morphological features as a results of propensity of divergent differentitation. Conventional urothelial carcinoma represent greater

than 90% of all cases of bladder cancer world, however squamous cell carcinoma is more prevelant in regions with endemic schistosoma infection.

In present study p63, GATA3 and Uroplakin were evaluated for the diagnosis of urothelial carcinoma. 100%, 85.7%, 75% of cases were positive for p63, GATA3 and Uroplakin. Kunju LP et al [108] and Reis-Filho JS et al [118] reported P63 positivity in 90% of cases of urothelial carcinoma. Chang A et al [119] showed GATA3 positivity in 86% of cases and Parker DC et al [120] showed UROPLAKIN positivity in 61% of the cases of urothelial carcinoma.

Hepatocellular carcinoma

The predominent hepatic epithelial malignancy observed in present study was of metastatic origin. Primary biliary adenocarcinoma (Cholangiocarcinoma) was diagnosed after ruling out deposits from other primaries and on the basis of IHC. Of primary epithelial malignant neoplasm, all the cases were hepatocellular carcinoma. We observed that HepPar-1, Glypican-3 were expressed in 100% of the cases. Our results were similar with the previous studies conducted by Al-Muhannadi et al [121], Lamps et al [122], Fan Z et al [123] and Lau SK et al [50] which observed high sensitivity for these markers in hepatocellular carcinoma.

pCEA showed canalicular staining pattern in 75% cases of hepatocellular carcinoma which was concordant with the studies conducted by Al-Muhannadi et al [121] as they observed 82.6% cases with canalicular staining pattern for pCEA. The reported sensitivity of pCEA (canalicular) for HCC had ranged between 60-95% in a study conducted by Borscheri N et al.[124] Also Al-Muhannadi et al [121] reported sensitivity and specificity for pCEA (canalicular) for HCC were 82.6% and 83.3% respectively, indicating a potential useful antibody for distinguishing HCC from metastatic adenocarcinomas. CK7-/CK20-immunoexpression was observed in 88.9% cases of HCC in present study which help to differentiate it from metastatic adenocarcinomas

and cholangiocarcinoma as observed by Maeda T et al [125] who reported CK7 expression in cholangiocarcinoma was higher than HCC.

Gastrointestinal tract

The commonly used marker for the distinction between esophageal squamous cell carcinoma and esophageal adenocarcinomas are CK7, CK20, p63, CK5/6 and CDX2. In our study 100% of squamous cell carcinomas were positive for CK5/6 and P63. These findings were consistent with studies done by DiMaio et al [126] and Olaf Kaufmann et al [127] who reported coexpression of CK5/6 and p63 in 97% and 100% of squamous cell carcinoma esophagus. Also Andrew et al [56] reported that CDX2 was positive in 63 % cases of adenocarcinoma esophagus.

Cytokeratin expression profile in gastric carcinomas is very variable according to various studies. In our study CK7 and CK20 positivity was seen in 83.3% and 16.7% of cases respectively. Goldstein NS et al[80] reported CK7+/CK20- expression in 47% and CK7+/CK20+ expression in 0% of gastric adenocarcinomas. In present study heterogenous CDX2 positivity was seen in 66.6% cases of gastric adenocarcinomas. Chu PG et al [128] reported CDX2 positivity in 78% of gastric adenocarcinomas.

E-cadherin was done on single case in present study. E cadherin loss was noted in 17% of gastric adenocarcinomas by Robert W Werling RW et al [129], author also reported CDX2 expression in 70% of gastric adenocarcinomas.

The expression of CEA in ductal adenocarcinoma is still under debate. mCEA is strongly positive in most pancreatic ductal adenocarcinomas. A little is known about CK7 and CK20 expression in pancreatic ductal adenocarcinomas. Wang NP et al [72] reported positive expression of both CK7 and CK20 where as Kaiser A et al [130] reported positive expression of CK7 and negative expression of CK20. In our study 100% of the cases were having CK7+/CK20- immunoexpression. Also cytoplasmic positivity for CEA was observed in 100% of the cases

which was similar with study done by Gebauer F et al [131] who reported positivity ranging from 85% to 100%.

We evaluated expression of CK7, CK20 and CDX2 for the diagnosis of colorectal carcinoma. CDX2 is normally expressed throughout the embryonic and postnatal life in the nuclei of intestinal epithelium. In present study 100% of the cases were CK7-/CK20+ and CDX2 positive. Bayrak et al [132] also reported similar results with 97% positivity for CDX2 and CK7-/CK20+ immunoexpression in 78% of the cases of colorectal adenocarcinomas. The CK7-/CK20+ pattern was identified in 65%-95% of colorectal adenocarcinomas in different series of studies done by Hernandez et al [133], Zhang PJ et al [134], Park SY et al [135]. Therefore it has been presumed that CK7 is not typically expressed by colonic epithelial tumors.

SATB2 was expressed in 100% cases of colorectal carcinoma cases in present study. Liu F et al [136] showed SATB2 expression in 85% of colorectal carcinoma. In their study they found that SATB2 is only expressed in colorectal carcinoma and is not expressed in several common digestive system tumors, such as gastric cancer, pancreatic cancer and cholangiocarcinomas. Another study done by Dabir et al[137] who reported that SATB2 is a supplementary immunohistochemical marker to CDX2 in the diagnosis of colorectal carcinomas.

Hence with well-performed and interpreted immunohistochemistry panels, pathologists can successfully identify the site of origin of metastatic carcinomas. It is crucial to understand not only the diagnostic uses of the many available antibodies but also the potential limits and pitfalls.

The identification of a primary site had taken on dramatically increased clinical relevance, given the differences in prognosis and treatment, particularly targeted therapies of carcinomas of various primary sites. By integrating morphology with well-performed and well-interpreted immunohistochemistry, the pathologist can frequently provide definitive diagnostic information in most cases regarding the most likely primary

site or sites of the carcinoma presenting as metastases. With the ongoing additions of lineage-specific transcription factors, pathologists have available an increasing number of relatively inexpensive IHC “tools,” which more accurately identify site of primary carcinoma. In this era of health care cost containment, and the need to provide clinicians with a relatively quick diagnosis, IHC remains the gold standard of diagnosis.

SUMMARY AND CONCLUSION

The present study was of 30 months duration (January 2018 to June 2020) to analyse the immunohistochemical profile of epithelial tumors conducted in the Department of Pathology Dayanand Medical College Ludhiana.

- A total of 302 cases of carcinomas on which IHC was done were analysed. Mean age of presentation of cases was 62.5 years with age range of 61-70 years. Males outnumbered females with male to female ratio of 1.3:1.
- Majority of the cases were primary carcinomas of involved sites constituting 66% of total cases studied and remaining 34% were secondary carcinomas (metastatic carcinomatous deposits). Extranodal metastatic carcinomatous deposits comprised 81.2% of total secondary carcinomas, liver was the most common extranodal site for metastatic carcinomatous deposits. Out of nodal sites of secondary carcinomas, supraclavicular lymph nodes were most common.
- The mean age of involvement of secondary carcinomas was 65.2 years. Male predominance was seen with male to female ratio of 1.2:1.
- Majority of the cases of metastatic carcinomatous deposits were CK7+/CK20-.
- All the cases of metastatic colorectal carcinoma were CK7-/CK20+, SATB2, CDX2 positive.
- Metastatic carcinomatous deposits from prostate and clear cell renal cell carcinomas were both CK7-/CK20- and constituted 40% each of total CK7-/CK20- cases.
- Adenocarcinoma lung was the most predominant type of secondary carcinomas involving both nodal and extranodal sites.
- Primary carcinoma lung was most common type out of which adenocarcinomas were predominant. All adenocarcinomas were

positive for TTF1, Napsin A and negative for p40. Squamous cell carcinoma lung was p40, p63, CK5/6 positive.

- Female genital tract was second most common site involving primary. Ovarian high grade serous carcinoma were WT1 and p53 positive, mucinous ovarian carcinoma were PAX8 positive and WT1 negative, endometroid adenocarcinoma were ER, p16 and PAX8 positive and clear cell carcinoma were Napsin A and PAX8 positive. Endometroid adenocarcinoma of endometrium were diffusely positive for ER and p16.
- All the cases of squamous cell carcinoma cervix were HPV associated and were strongly positive for p16, CK5/6 and p63.
- Mean age of involvement of adenocarcinoma prostate was 67.1 years. AMACR was positive in all the cases of prostatic adenocarcinoma and basal cells were negative for HMWCK, p63 and CK5/6 in all the cases.
- Urinary system constituted 4.3% cases of total primary carcinoma. Out of which majority were from urinary bladder followed by kidney. Urothelial carcinomas were p63, GATA3 and Uroplakin positive. Clear cell renal cell carcinoma was CD10, Vimentin and RCC positive. Single case of chromophobe renal cell carcinoma was CD117, EMA and AMACR positive.
- Lower Gastrointestinal tract was involved in 5.9% cases of carcinoma. SATB2, CDX2 and CK20 was positive in all colorectal adenocarcinoma. Single case of squamous cell carcinoma anal canal was having poorly differentiated morphology and was positive for CK5/6 and p63.
- Mean age of involvement for upper gastrointestinal tract carcinoma was 54.7 years. Males were predominantly involved with M:F ratio of 2.5:1. Gastric adenocarcinoma were positive for CK7, CDX2 and Her 2 Nu. Squamous cell carcinoma oesophagus was positive for CK5/6, p63 and 50% cases were positive for CK7 as well.

- Hepatocellular carcinoma was diagnosed in 3% of total cases. Majority of the cases of HCC were CK7 and CK20 negative. HepPar-1 & Glypican-3 were positive in all the cases and CEA showed canalicular staining, CD34 was highlighting the sinusoidal pattern.
- Carcinomas involving head and neck region was seen in 2% cases with mean age of involvement was 68 years with age range of 61-70 year. High grade adenoid cystic carcinoma showed EMA & CK7 highlighted ductal lumen cells and p63, CK5/6 were highlighting myoepithelial cells.

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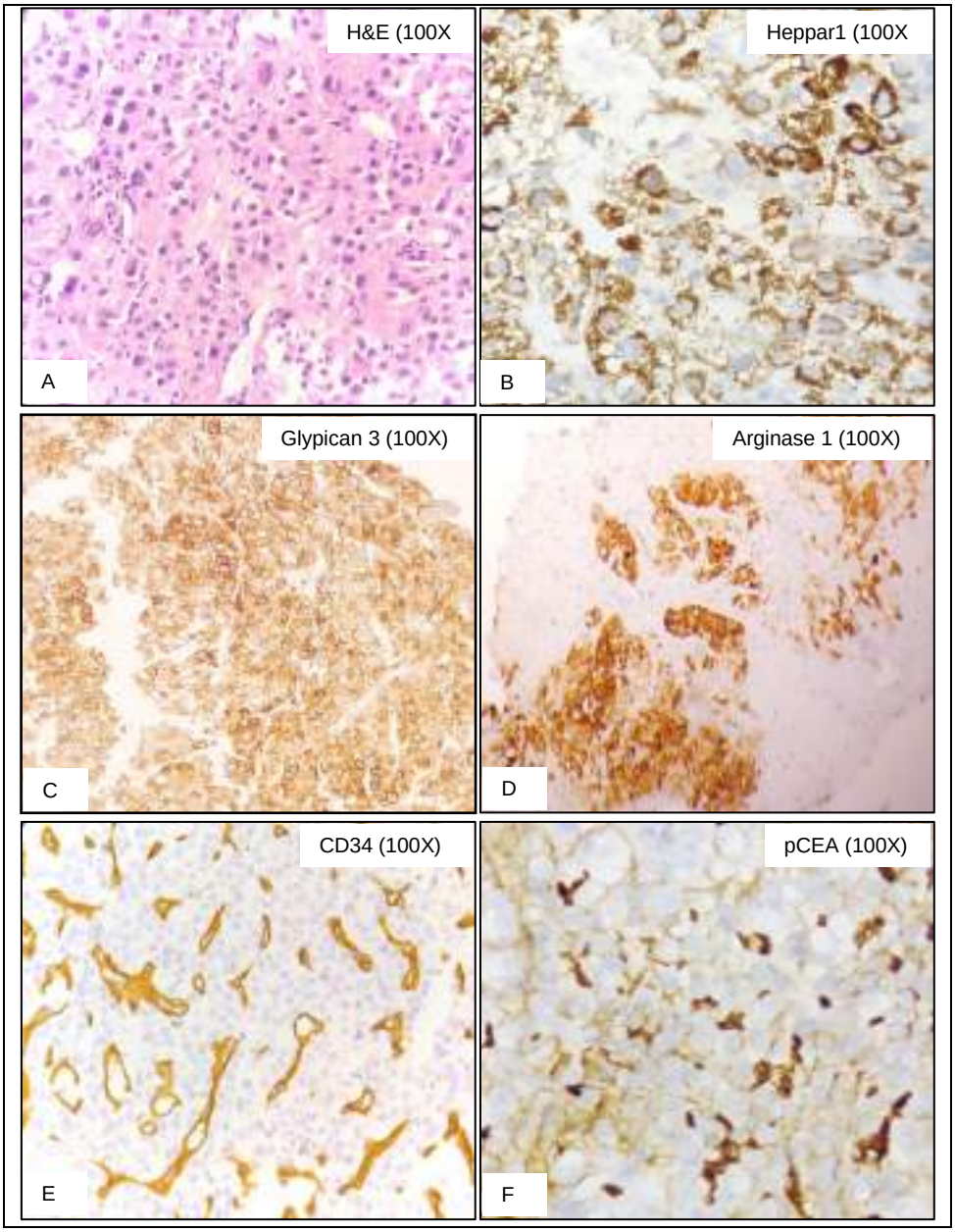
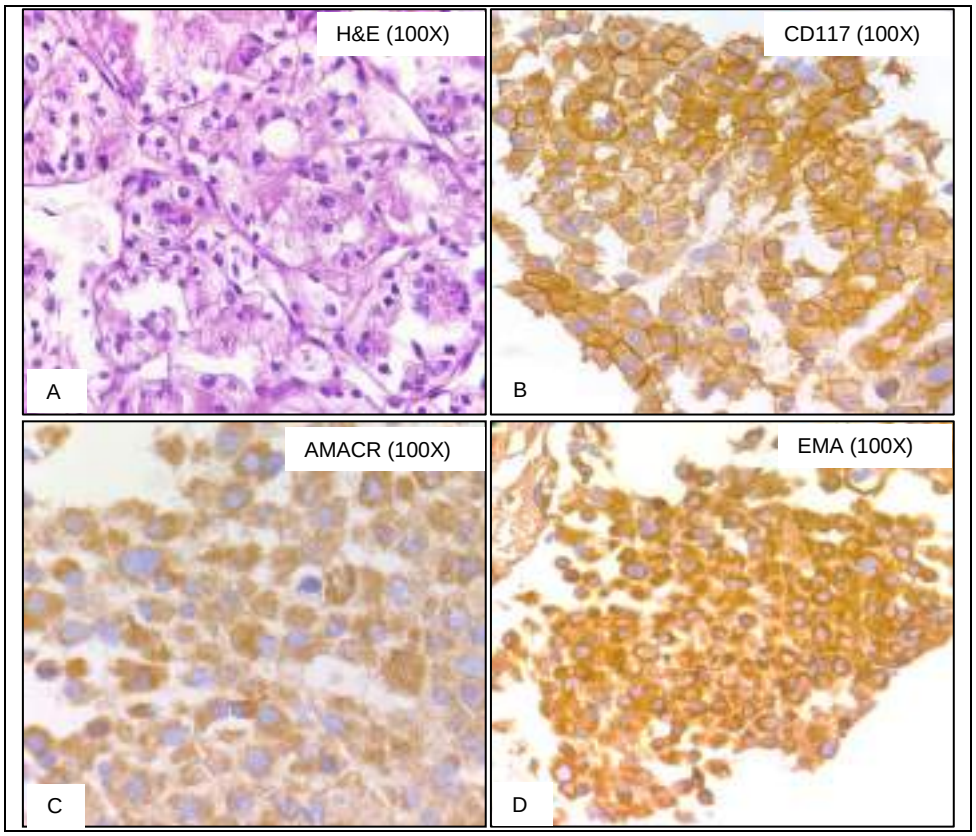
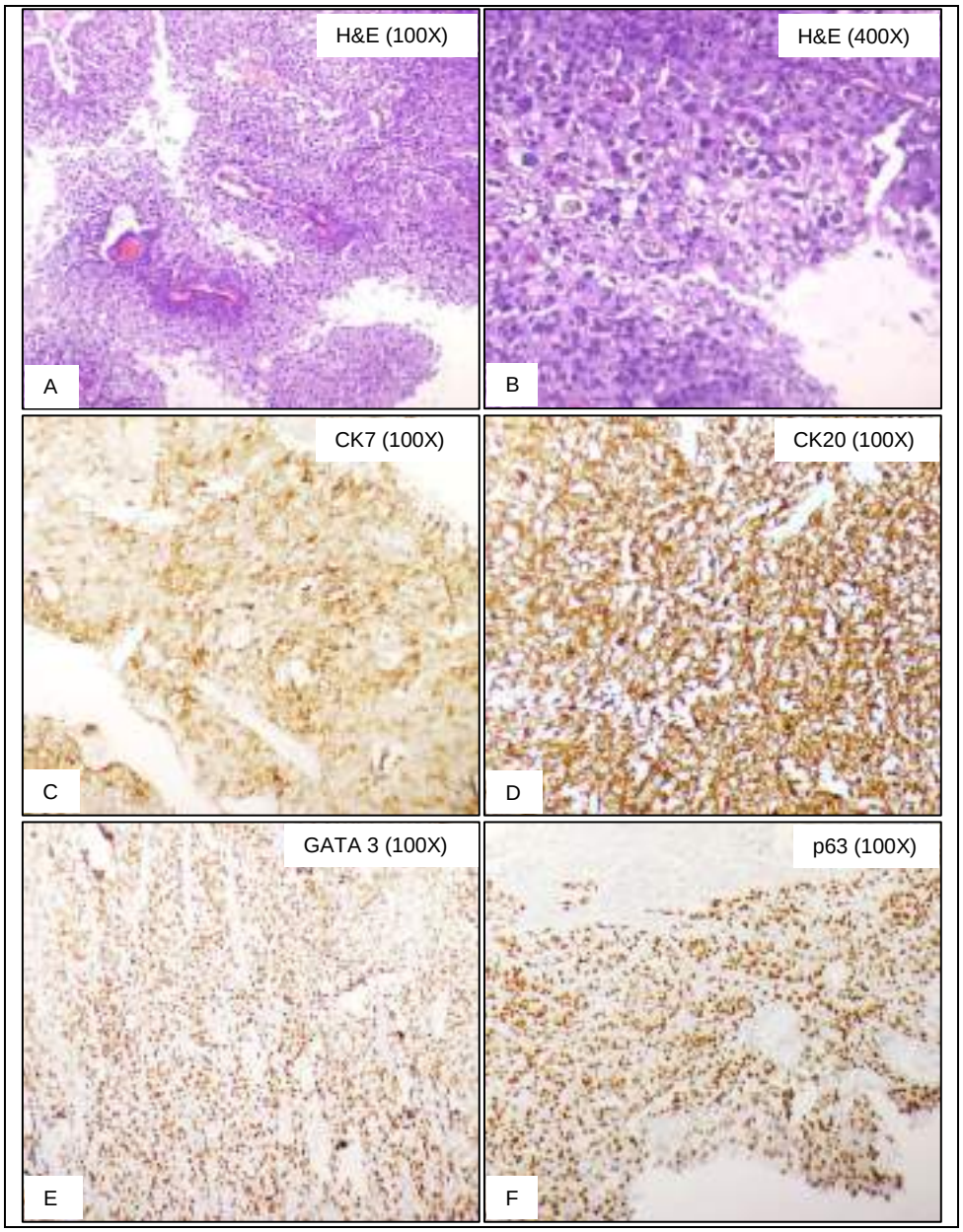


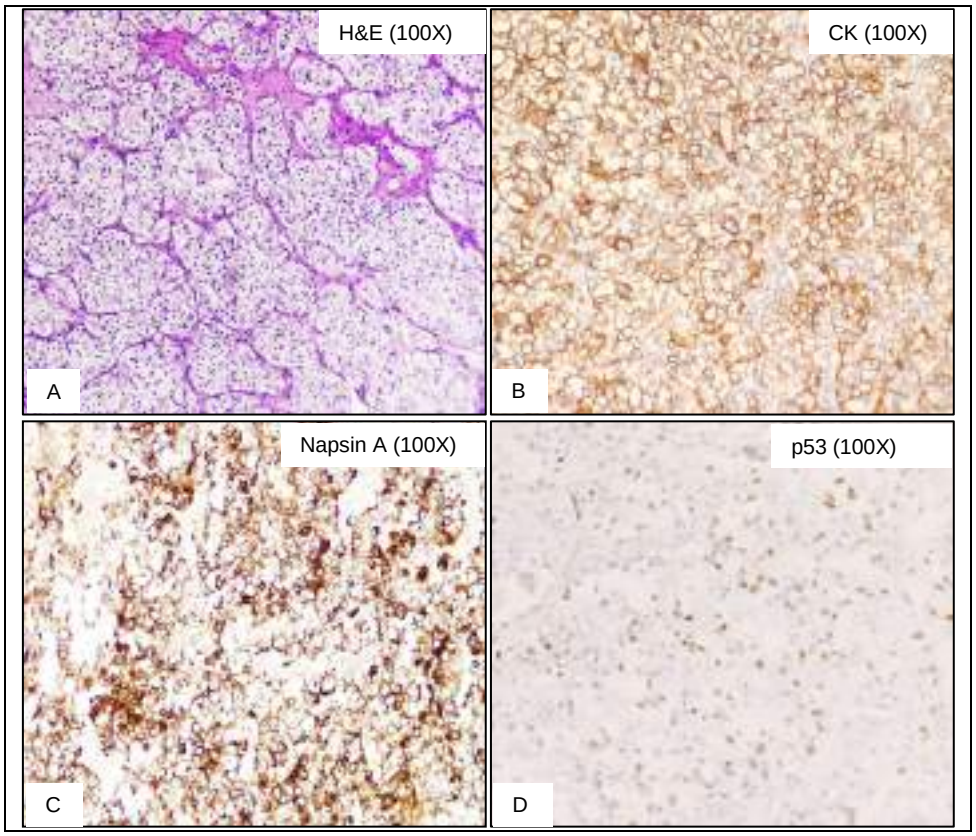
Picture 1: Hepatocellular carcinoma: (A) Photomicrograph showing widened trabeculae of tumor cells (H&E,100X); On immunohistochemistry tumor cell are positive for (B,C,D) Heppar 1, Glypican 3, Arginase 1 (Cytoplasmic, 100X), (E) CD34 highlighting the sinusoidal pattern; (F) pCEA highlighting the biliary canaliculi (100X)



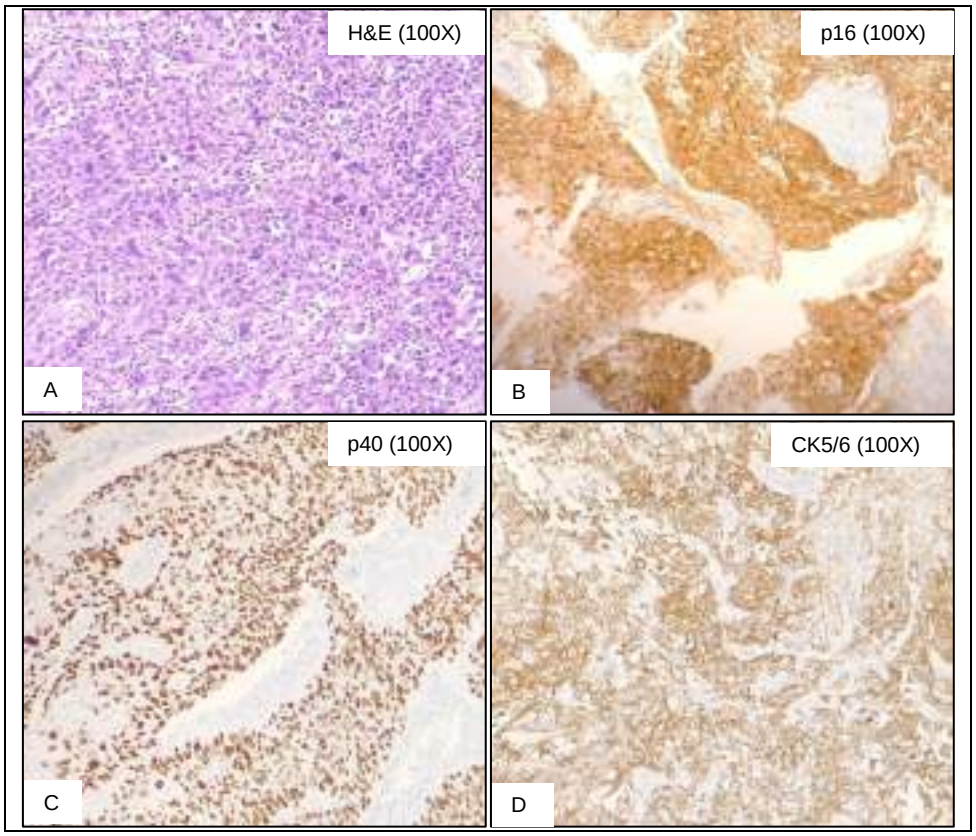
Picture 2: Chromophobe renal cell carcinoma: (A) Photomicrograph showing tumor cells with irregular nuclear contours and prominent cell borders (H&E,100X); On immunohistochemistry tumor cells are positive for (B,C,D) CD117, AMACR, EMA (membranous & cytoplasmic, 100X)



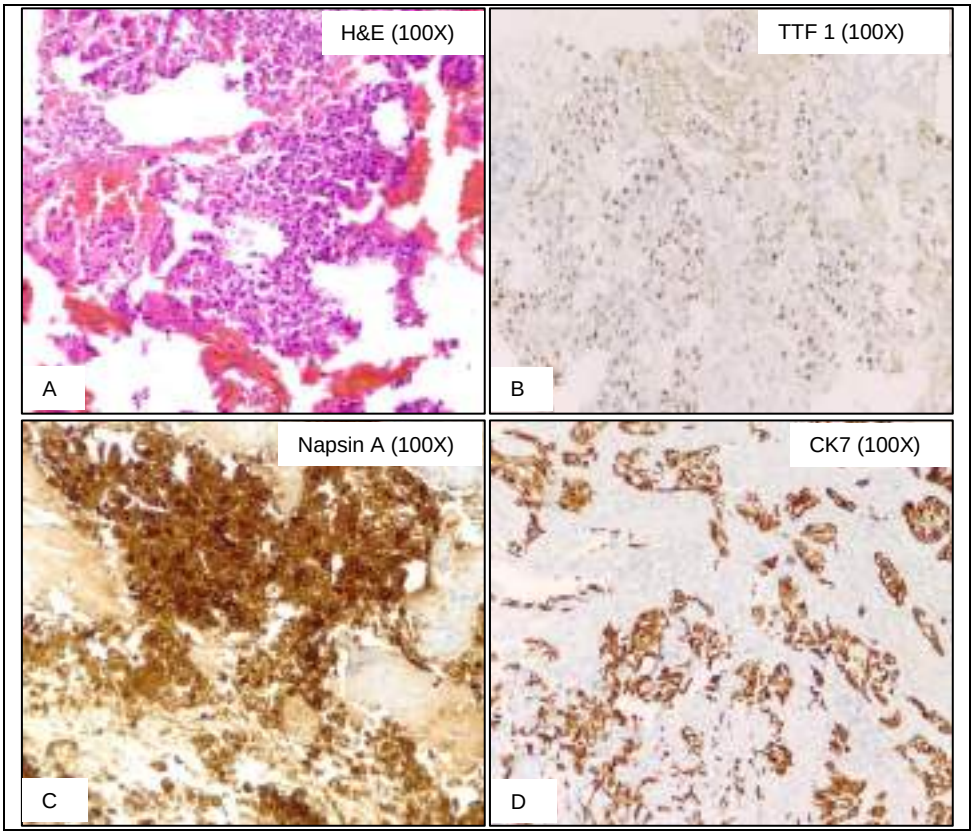
Picture 3: Papillary urothelial carcinoma: (A) Photomicrograph showing tumor cells arranged in papillae lined by cells (>7 layers) with central fibrovascular core (H&E,100X); (B) Photomicrograph showing high grade features of tumor cells with brisk mitosis (H&E, 400X), On immunohistochemistry tumor cells are positive for (C,D) CK7,CK20 (cytoplasmic & membranous, 100X) ; (E,F) GATA 3, p63 (nuclear, 100X).



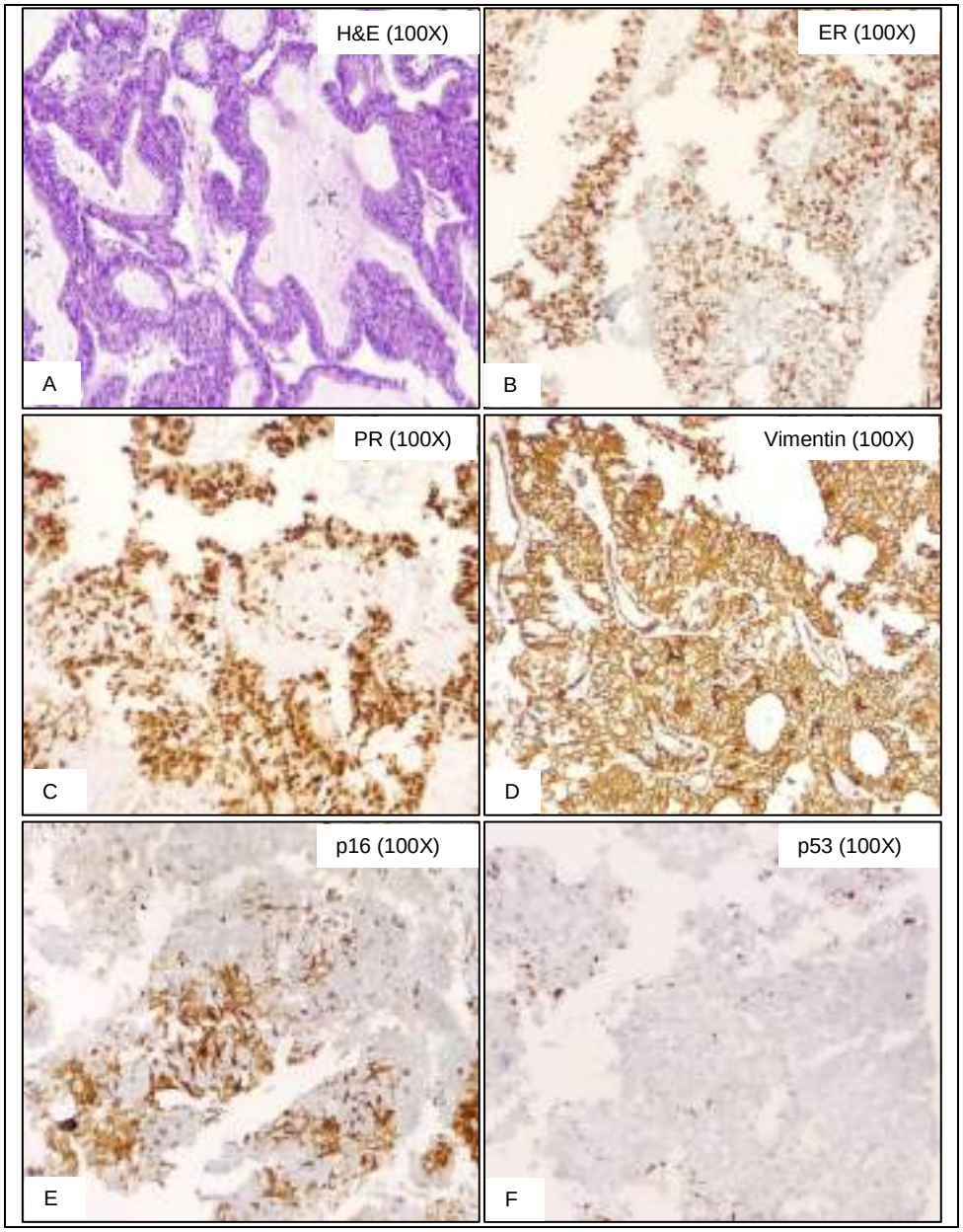
Picture 4: Clear cell carcinoma ovary: (A) Photomicrograph showing tumor cells arranged in nest and are having clear cytoplasm (H&E, 100X); On immunohistochemistry tumor cells are positive for (B) Cytokeratin (cytoplasmic & membranous, 100X); (C) Napsin A (cytoplasmic, 100X); (D) p53 (weak nuclear, 100X)



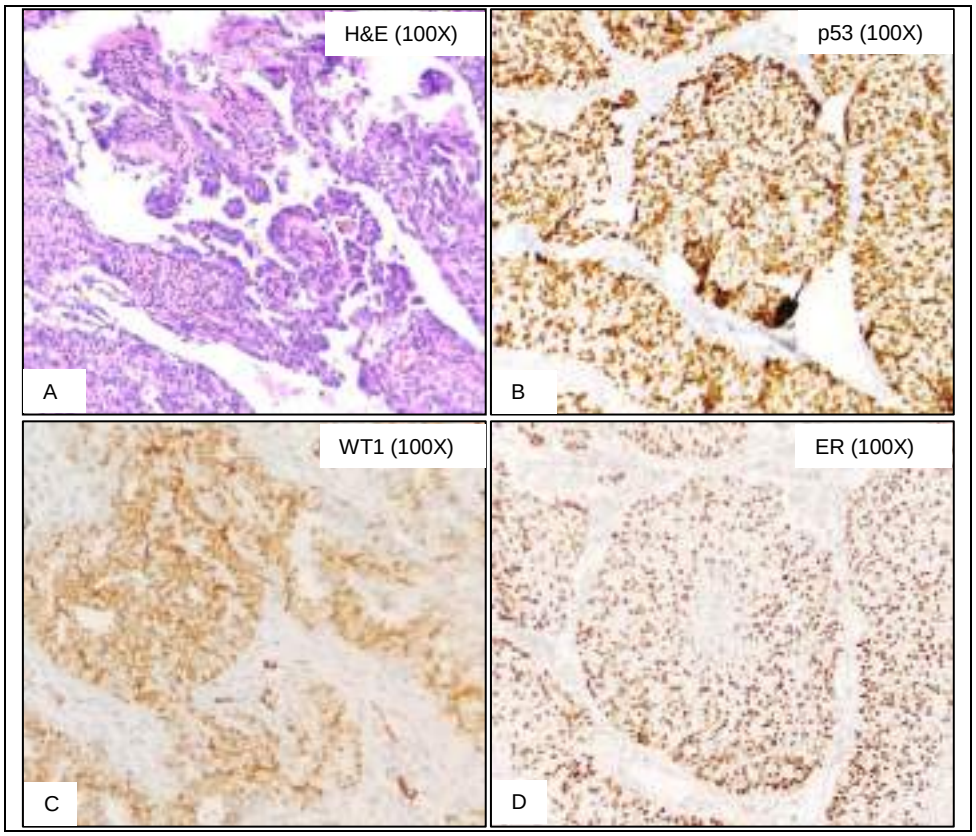
Picture 5: HPV associated squamous cell carcinoma cervix: (A) Photomicrograph showing sheets and occasional nests of tumor cells (H&E, 100X); on immunohistochemistry tumor cells are positive for (B) p16 (strong nuclear & cytoplasmic); (C) p40 (Nuclear, 100X) (D) Ck5/6 (cytoplasmic & membranous, 100X).



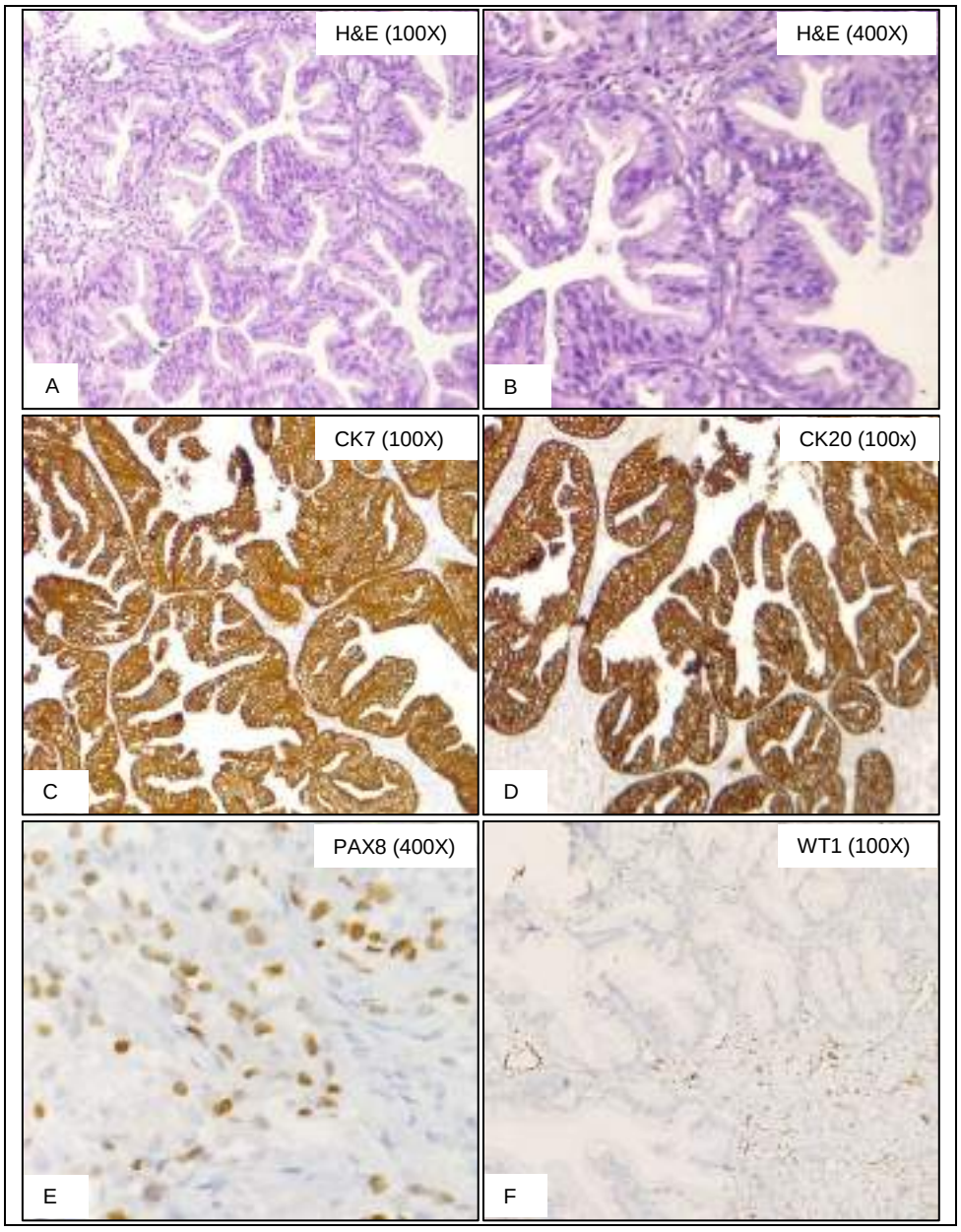
Picture 6: Metastatic carcinomatous deposits of adenocarcinoma lung in brain: (A) Photomicrograph showing tumor cells arranged in nests surrounded by normal brain parenchyma and areas of haemorrhage (H&E, 100X); On immunohistochemistry tumor cells are positive for (B) TTF 1 (Nuclear, 100X); (C) Napsin A (Strong cytoplasmic, 100X); (D) CK7 (Cytoplasmic& membranous, 100X).



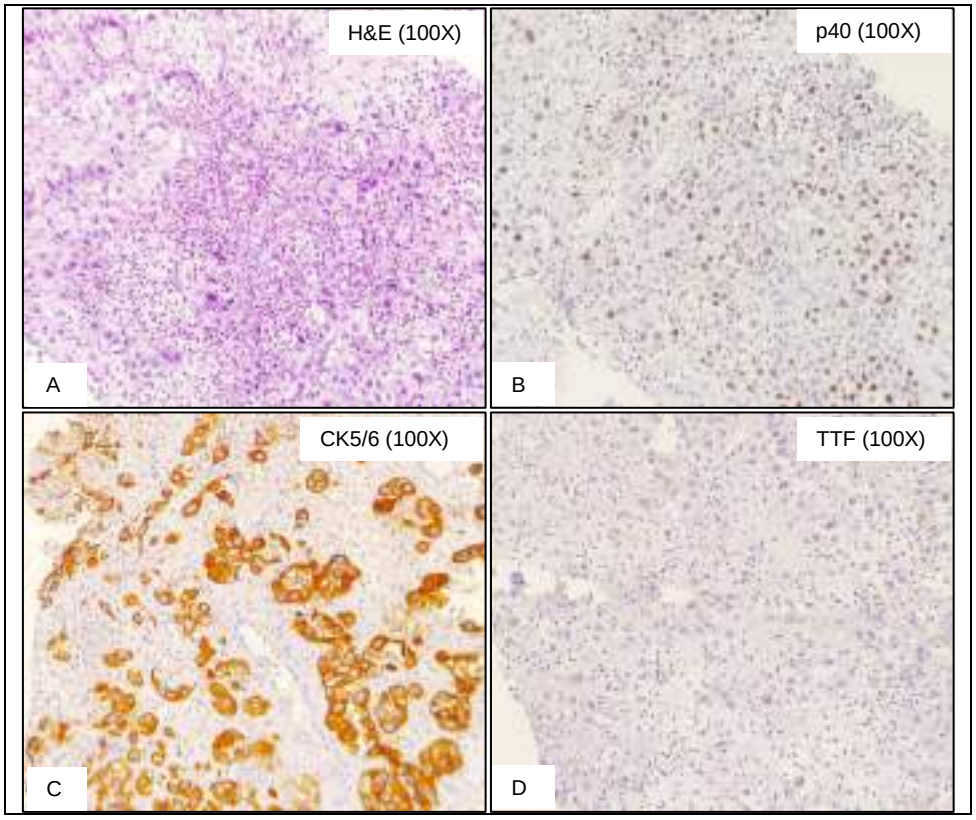
Picture 7: Endometroid Adenocarcinoma endometrium: (A) Photomicrograph showing tumor cells arranged in glands (H&E, 100x); On immunohistochemistry tumor cells are positive for (B,C) ER, PR (nuclear, 100X); (D) Vimentin (cytoplasmic, 100X); (E) p16 (focal cytoplasmic & nuclear, 100X); (F) p53 (focal weak nuclear, 100X).



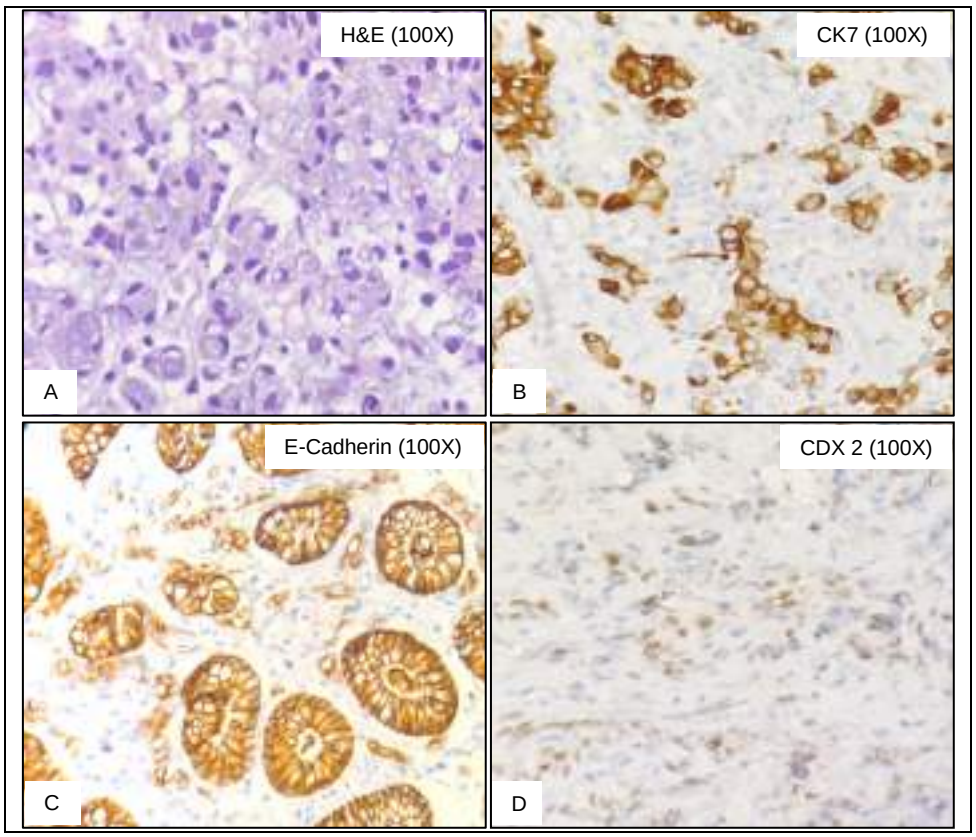
Picture 8: Serous carcinoma ovary: (A) Photomicrograph showing tumor cells arranged in papillary configuration (H&E,100X); on immunohistochemistry tumor cells are positive for (B) p53 (strong diffuse nuclear, 100X); (C,D) WT1 & ER (Nuclear,100X).



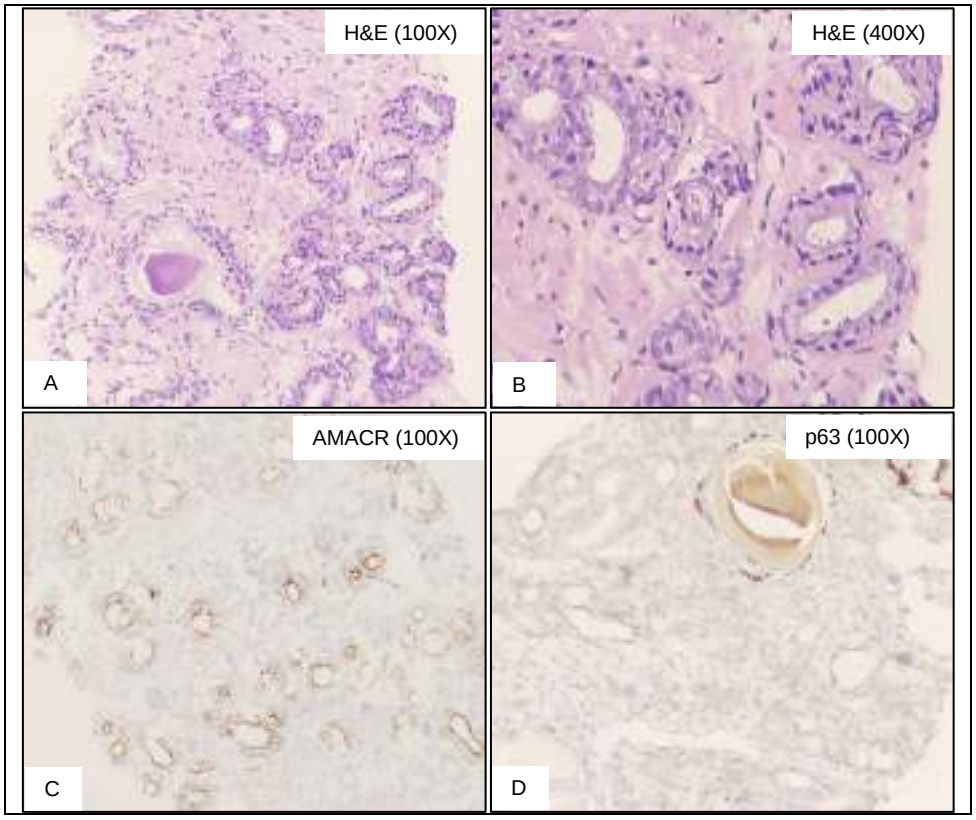
Picture 9: Mucinous carcinoma ovary: (A) Photomicrograph showing tumor cells arranged in glandular configuration having tall columnar cell morphology (H&E, 100X), (B) Photomicrograph showing intestinal morphology of tumor cells (400X); On immunohistochemistry tumor cells are positive for (C,D) CK7, CK20 (strong cytoplasmic & membranous, 100X); (E) PAX 8 (nuclear,100X); (F) Tumor cells are negative for WT1 (100X).



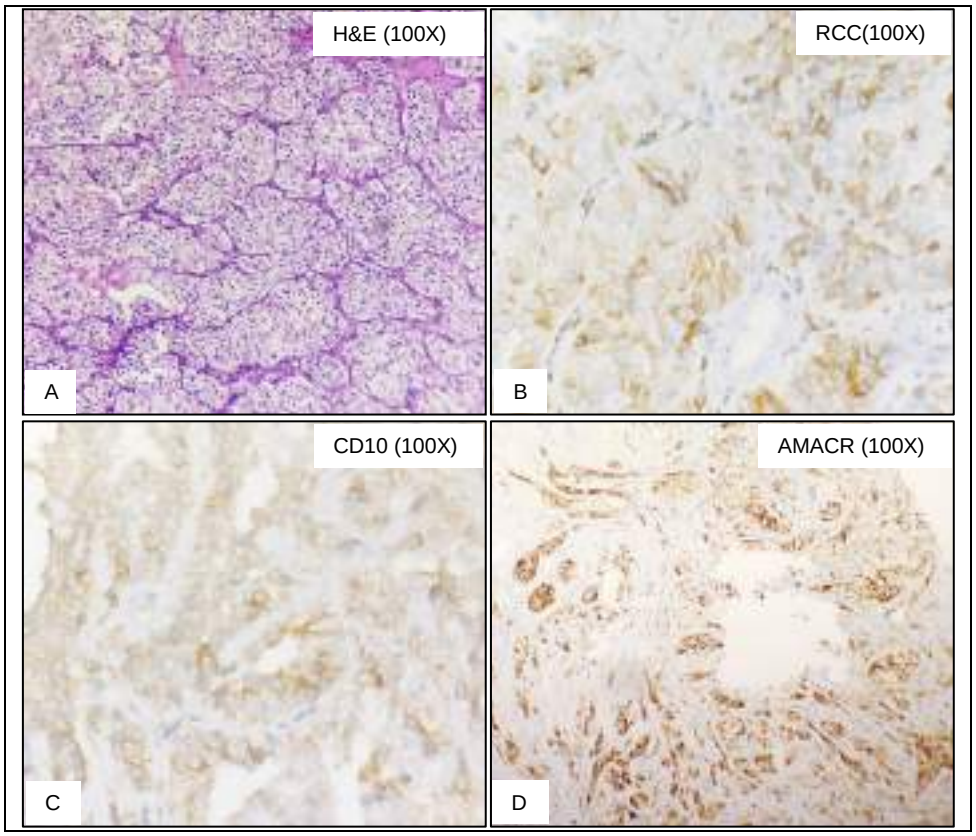
Picture 10: Squamous cell carcinoma lung: (A) Photomicrograph showing tumor cells arranged in nests & cords (H&E,100X); On immunohistochemistry tumor cells are positive for (B) p40 (Nuclear,100X); (C) CK5/6 (cytoplasmic,100X) and (D) Tumor cells are negative for TTF1 (100X)



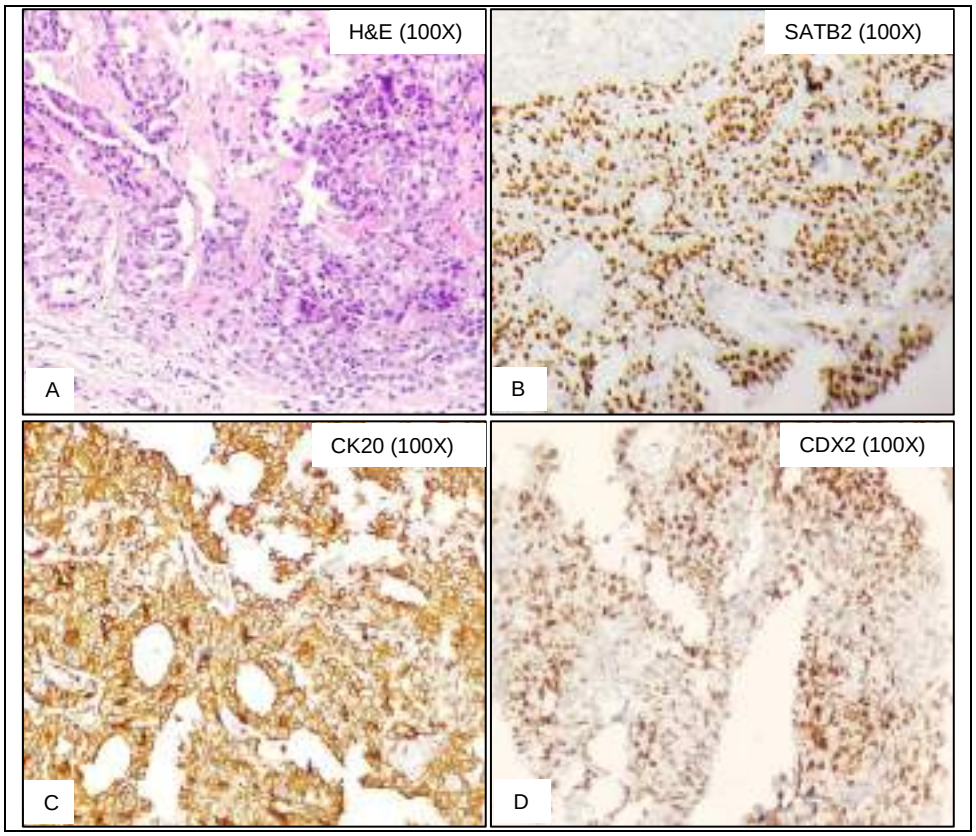
Picture 11: Gastric signet ring carcinoma: (A) Photomicrograph showing clusters and singly scattered cells with signet ring cell morphology (H&E, 100X); On immunohistochemistry tumor cells are positive for (B) CK7 (cytoplasmic and membranous, 100X); (C) E cadherin (membranous, 100X); (C) CDX2 (nuclear, 100X).



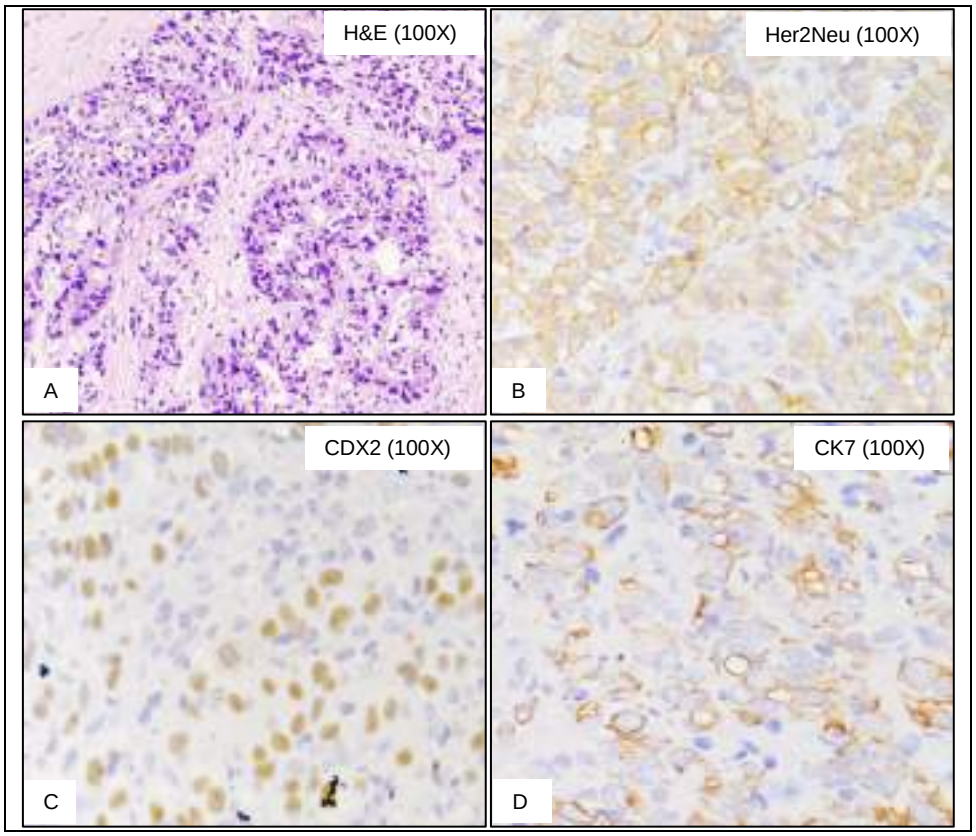
Picture 12: Adenocarcinoma Prostate: (A) Photomicrograph showing back to back arrangement of glands (H&E,100X); (B) Photomicrograph showing single layer of epithelium of neoplastic glands (H&E, 400X); On immunohistochemistry tumor cells are positive for (C) AMACR (cytoplasmic, 100X) and (D) p63 is negative in basal layer of glands (100X).



Picture 13: Clear cell renal cell carcinoma: (A) Photomicrograph showing nests of tumor cells having abundant amount of clear cytoplasm (H&E,100X); On immunohistochemistry tumor cells are positive for (B) RCC (membranous, 100X); (C) CD10 (membranous, 100X); (D) AMACR (cytoplasmic,100X).



Picture 14: Metastatic carcinomatous deposits of colorectal adenocarcinoma to omentum: (A) Photomicrograph showing tumor cells arranged in glandular configuration; On immunohistochemistry tumor cells were positive for (B) SATB2 (nuclear,100X); (C) CK20 (Cytoplasmic, 100X); (D) CDX2 (Nuclear,100X)



Picture 15: Gastric adenocarcinoma: (A) Photomicrograph showing tumor cells arranged nests with focal glandular configuration; On immunohistochemistry tumor cell are positive for (B) Her 2 Neu (membranous 2+, 100X); (C) CDX2 (nuclear, 100X); (C) CK7 (membranous,100X)

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
1	412482	09-2018	14856-17	SS	60	MALE	CEA: 2.82	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SMALL CLUSTER HAVING VESICULAR NUCLEI	CARCINOMA	-	-	-	-	-
2	406603	11-2018	14445-17	RK	62	FEMALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN CORDS,SHEETS AND FOCAL GLANDULAR CONFIGURATON	CARCINOMA	-	-	-	-	POSITIVE
3	264611	28-2018	73-18	LB	81	MALE	-	PROSTATE	CORE BIOPSY	BACK TO BACK ARRANGEMENT OF GLANDS LINED BY SINGLE LAYER OF EPITHELIUM	ADENOCARCINOMA	-	-	-	-	-
4	355273	39-2018	403-18	CD	65	MALE	PROLACTIN: 0.06, UIBC: 174.5, TIBC: 191	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	POSITIVE
5	419251	43-2018	790-18	GS	64	MALE	-	ESOPHAGUS	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	-
6	421039	51-2018	912-18	JK	60	FEMALE	CA 125: 309.4	ENDOMETRIUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	POSITIVE
7	420087	54-2018	513-18	TB	78	MALE	-	KIDNEY	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	MALIGNANT TUMOR	POSITIVE	-	-	POSITIVE	NEGATIVE
8	425256	56-2018	794-18	PS	70	MALE	-	PROSTATE	CORE BIOPSY	FOCAL GLANDS LINED BY SINGLE LAYER OF EPITHELIUM	SUSPICIOUS OF MALIGNANCY	-	-	-	-	-
9	16907	60-18	981-18	KA	52	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN TINY CLUSTER	SUSPICIOUS OF MALIGNANCY	POSITIVE	-	-	-	POSITIVE
10	427270	67-18	1161/18	KK	52	FEMALE	CEA:9.15 U/L	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND CORDS	CARCINOMA	-	-	-	-	POSITIVE
11	429627	68/18	1238/18	BK	71	FEMALE	CA125: 190.3mg/dl	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS	CARCINOMA	POSITIVE	-	-	-	POSITIVE
12	436622	78/18	1500/18	SG	54	MALE	CEA:1052 U/L	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
13	436517	84/18	1477/18	JR	58	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NEST WITH INDIVIDUAL CELL KERATINIZATION	SQUAMOUS CELL CARCINOMA	-	-	-	-	NEGATIVE
14	431218	86/18	1503/18	MB	75	MALE	CEA: 78.2 U/L	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS WITH SURROUNDING HEPATIC PARENCHYMA	ADENOCARCINOMA	-	-	-	-	POSITIVE
15	250972	102/18	1721/18	SB	65	MALE	PSA:1.28 mg/dl	LIVER SOL	CORE BIOPSY	TUMOR CELLS SINGLY SCATTERED HAVING VESICULAR NUCEI	CARCINOMA	-	-	-	-	NEGATIVE
16	447248	115/18	2306/18	DS	80	MALE	CEA:659U/L	LIVER SOL	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND GLANDS HAVING HYPRCHROMATIC NUCLEI	CARCINOMA	-	-	-	-	POSITIVE
17	450711	119/18	2429/18	MK	70	FEMALE	CEA:3.20 U/L	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NESTS HAVING VESICULAR NUCLEI	CARCINOMA	-	-	-	-	POSITIVE
18	454458	124/18	2666/18	AR	72	FEMALE	-	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS	CARCINOMA	POSITIVE	-	-	-	POSITIVE
19	455782	126/18	2794/18	JK	41	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	CARCINOMA	-	-	-	-	POSITIVE
20	436713	130/18	2582/18	SK	62	FEMALE	CA19-9: 399.8 mg/dl	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	CARCINOMA	-	-	-	-	POSITIVE
21	424305	135/18	994/18	AK	57	FEMALE	CEA: 55.7 U/L	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	CARCINOMA	-	-	-	-	POSITIVE
22	263356	167/18	3522/18	KK	62	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	CARCINOMA	-	-	-	-	POSITIVE
23	464887	169/18	3598/18	SS	55	MALE	-	CERVICAL LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	-
24	467535	175/18	3857/18	SM	73	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND SINGLY SCATTERED	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
25	465248	185/18	4365/18	AS	77	MALE	PSA: 0.22 mg/dl	PROSTATE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS LINED BY SINGLE LAYER OF CELLS	ADENOCARCINOMA	-	-	-	-	-
26	474273	192/18	3995/18	GS	65	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	NON SMALL CELL CARCINOMA	-	-	-	-	-
27	473312	193/18	4303/18	R	53	MALE	CEA: 104.8U/L	RECTUM	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	NEGATIVE
28	472880	194/18	3917/18	SK	62	MALE	-	PROSTATE	CORE BIOPSY	BACK TO BACK ARRANGEMENT OF GLANDS LINED BY SINGLE LAYER OF EPITHELIUM	ADENOCARCINOMA	-	-	-	-	-
29	481236	199/18	4456/18	KS	60	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED ALONG THE ALVEOLAR WALLS, POOLS OF MUCIN ALSO NOTED	ADENOCARCINOMA	-	-	-	-	-
30	478451	203/18	4478/18	N	40	FEMALE	CA19-9:293.4 mg/dl	ABDOMINAL LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
1	412482	-	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-
2	406603	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	264611	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	355273	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-
5	419251	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	421039	NEGATIVE	NEGATIVE	NEGATIVE	-	NEGATIVE	-	-	NEGATIVE	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-
7	420087	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	50%	-
8	425256	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	16907	POSITIVE	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
10	427270	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	50%	-
11	429627	NEGATIVE	-	NEGATIVE	-	POSITIVE	-	-	NEGATIVE	-	POSITIVE	NEGATIVE	-	POSITIVE	NEGATIVE	NEGATIVE	NEGATIVE	-	-	-	-
12	436622	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
13	436517	-	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
14	431218	NEGATIVE	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-
15	250972	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE
16	447248	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	POSITIVE	-	-	POSITIVE	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-
17	450711	NEGATIVE	-	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	-	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-
18	454458	NEGATIVE	NEGATIVE	NEGATIVE	-	POSITIVE	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-
19	455782	NEGATIVE	-	-	-	NEGATIVE	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-
20	436713	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-
21	424305	NEGATIVE	-	-	-	POSITIVE	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	NEGATIVE	NEGATIVE	-	-	-	-
22	263356	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	NEGATIVE	-	-	-
23	464887	-	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
24	467535	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	-	-	-	-
25	465248	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	POSITIVE	-	-	-
26	474273	-	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-
27	473312	POSITIVE	POSITIVE	POSITIVE	POSITIVE	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-
28	472880	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	481236	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
30	478451	NEGATIVE	NEGATIVE	-	-	NEGATIVE	-	-	NEGATIVE	-	-	NEGATIVE	NEGATIVE	NEGATIVE	NEGATIVE	-	-	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
1	412482	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
2	406603	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
3	264611	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
4	355273	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
5	419251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
6	421039	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
7	420087	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	CLEAR CELL RENAL CELL CARCINOMA	PRIMARY
8	425256	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
9	16907	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS UPPER GI/PANCREATICOBILIARY	SECONDARY
10	427270	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
11	429627	-	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS SEROUS CARCINOMA OVARY	SECONDARY
12	436622	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS UPPER GI/PANCREATICOBILIARY	SECONDARY
13	436517	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
14	431218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
15	250972	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	WELL DIFFERENTIATED HEPATOCELLULAR CARCINOMA	PRIMARY
16	447248	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
17	450711	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
18	454458	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
19	455782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
20	436713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
21	424305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
22	263356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
23	464887	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS SQUAMOUS CELL CARCINOMA LUNG	SECONDARY
24	467535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
25	465248	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
26	474273	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
27	473312	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
28	472880	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
29	481236	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
30	478451	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
31	469209	214/18	4715/18	SD	51	FEMALE	CEA:4.12U/L	LUNG	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS, SHEETS AND OCCASIONAL GLANDULAR CONFIGURATION	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
32	486198	220/18	4905/18	KD	72	FEMALE	CA125: 2440	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
33	485820	222/18	4783/18	JS	83	MALE	-	PROSTATE	CORE BIOPSY	OCCASIONAL GLANDS LINED BY SINGLE LAYER OF EPITHELIUM	SUSPICIOUS OF MALIGNANCY	-	-	-	-	-
34	176067	225/8	5094/18	NK	38	FEMALE	-	LIVER SOL	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	CARCINOMA	-	-	-	-	POSITIVE
35	491366	230/15	5197/18	JK	58	FEMALE	-	ESOPHAGUS	INCISIONAL	SCATTERED TUMOR CELLS HAVING VESICULAR NUCLEI AND PROMINENT NUCLEOLI	CARCINOMA	-	-	-	-	-
36	333888	233/18	5286/18	S	44	FEMALE	-	ENDOMETRIUM	EXCISIONAL	BACK TO BACK ARRANGEMENT OF GLANDS SEPARATED BY SCANTY STROMA	ENDOMETROID CARCINOMA	-	-	-	POSITIVE	POSITIVE
37	487047	237/18	5264/18	PR	51	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	-
38	480449	239/18	4696/18	AS	66	MALE	CEA:25.5	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	CARCINOMA	-	-	-	-	-
39	497882	242/18	5680/18	SS	57	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	-
40	472567	264/18	3908/18	NK	57	FEMALE	CA125:9.4	ENDOMETRIUM	INCISIONAL	TUMOR CELLS ARRANGED IN PAPILLARY AND IN GLANDULAR CONFIGURATION	ADENOCARCINOMA LIKELY ENDOMETROID	-	-	-	POSITIVE	POSITIVE
41	497882	265/18	5680/18	SK	58	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	NON SMALL CELL CARCINOMA	-	-	-	-	-
42	113637	268/18	5021/18	KK	57	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	CARCINOMA	-	-	-	-	NEGATIVE
43	497702	277/18	5828/18	BS	71	MALE	CEA:508.9U/L, CA19-9: 299	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	POSITIVE
44	510513	287/18	6632/18	SS	63	MALE	CA19-9: 111.9 mg/dl	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	POSITIVE
45	316154	292/18	6869/18	DG	83	MALE	PSA: 92.5	PROSTATE	CORE BIOPSY	BACK TO BACK ARRANGEMENT OF GLANDS LINED BY SINGLE LAYER OF CELLS	ADENOCARCINOMA	-	-	-	-	-
46	505064	293/18	6563/18	BK	60	FEMALE	-	BRAIN SOL	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDULAR AND PAPPILARY CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
47	439687	294/18	1962/18	VS	67	MALE	-	ESOPHAGUS	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND OCCASIONAL GLANDS	CARCINOMA	-	-	-	-	NEGATIVE
48	530651	342/18	8128/18	HS	59	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS WITH FOCAL GLANDULAR CONFIGURATION	CARCINOMA	POSITIVE	-	-	-	POSITIVE
49	506713	343/18	7921/18	KS	73	MALE	-	HIP BONE	CORE BIOPSY	SCATTERED TUMOR CELLS HAVING VESICULAR NUCLEI AND MODERATE CYTOPLASM	CARCINOMA	POSITIVE	-	-	-	NEGATIVE
50	501573	348/18	6065/18	NB	60	MALE	-	ESOPHAGUS	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND CLUSTERS	CARCINOMA	-	-	-	-	NEGATIVE
51	545153	385/19	9089/18	BL	65	MALE	-	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	NEGATIVE
52	362836	386/18	9215/18	BD	69	MALE	-	RIB	CORE BIOPSY	TUMORS CELLS ARRANGED IN GLANDS AND CLUSTERS SEPARATED BY SEPTAE	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	NEGATIVE
53	541839	387/18	8911/18	AP	55	MALE	-	PANCREAS	INCISIONAL	TUMOR CELLS ARRANGED IN IRREGULAR GLANDS WITH VESICULAR NUCLEI	CARCINOMA	POSITIVE	-	-	-	POSITIVE
54	451720	391/18	2675/18	HK	50	FEMALE	-	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN BACK TO BACK ARRANGEMENT OF GLANDS WITH OCCASIONAL PAPILLARY CONFIGURATION	ADENOCARCINOMA	-	-	-	POSITIVE	POSITIVE
55	547692	396/18	9354/18	MM	63	MALE	-	LUNG	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDS	CARCINOMA	POSITIVE	-	-	-	POSITIVE
56	555845	405/18	9800/18	PS	74	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS HAVING VESICULAR NUCLEI	CARCINOMA	-	-	-	-	-
57	549749	419/18	9657/18	DK	80	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND OCCASIONAL GLANDS	NON SMALL CELL CARCINOMA	-	-	-	-	-

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
31	469209	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	POSITIVE	-	-	POSITIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-
32	486198	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-
33	485820	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	176067	NEGATIVE	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-
35	491366	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	333888	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-
37	487047	-	-	-	NEGATIVE	NEGATIVE	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	NEGATIVE	-	-	-	-
38	480449	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-
39	497882	-	-	-	NEGATIVE	NEGATIVE	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-
40	472567	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
41	497882	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
42	113637	-	-	-	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-
43	497702	NEGATIVE	-	NEGATIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	NEGATIVE	-	-	NEGATIVE
44	510513	NEGATIVE	NEGATIVE	NEGATIVE	-	-	POSITIVE	-	NEGATIVE	-	-	NEGATIVE	NEGATIVE	-	-	NEGATIVE	NEGATIVE	NEGATIVE	-	-	-
45	316154	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-
46	505064	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-
47	439687	POSITIVE	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	530651	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	NEGATIVE
49	506713	POSITIVE	NEGATIVE	POSITIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-
50	501573	NEGATIVE	-	-	POSITIVE	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
51	545153	-	-	-	POSITIVE	POSITIVE	-	-	POSITIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
52	362836	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	POSITIVE	NEGATIVE	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-
53	541839	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
54	451720	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-
55	547692	NEGATIVE	-	POSITIVE	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	NEGATIVE	-	-	-
56	555845	-	-	-	-	POSITIVE	-	-	NEGATIVE	-	-	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-
57	549749	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	NEGATIVE	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
31	469209	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
32	486198	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
33	485820	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
34	176067	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
35	491366	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
36	333888	-	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
37	487047	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
38	480449	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
39	497882	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
40	472567	-	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
41	497882	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
42	113637	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY CLEAR CELL RENAL CELL CARCINOMA	SECONDARY
43	497702	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
44	510513	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY UROTHELIAL IN ORIGIN	SECONDARY
45	316154	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
46	505064	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
47	439687	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
48	530651	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
49	506713	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY
50	501573	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
51	545153	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS SQUAMOUS CELL CARCINOMA LUNG	SECONDARY
52	362836	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY CLEAR CELL RENAL CELL CARCINOMA	SECONDARY
53	541839	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
54	451720	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
55	547692	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
56	555845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
57	549749	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
58	544657	440/18	9149/18	DK	66	FEMALE	-	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND PAPILLAROID FRAGMENTS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
59	560832	464/18	10531/18	IS	58	MALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
60	569488	473/18	10745/18	SS	52	MALE	-	ESOPHAGUS	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	POSITIVE
61	560657	480/19	10125/18	SD	82	MALE	-	COLON	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND SHEETS HAVING VESICULAR NUCLEI	MALIGNANT TUMOR	POSITIVE	-	NEGATIVE	-	NEGATIVE
62	556444	501/19	10935/18	GK	55	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN DIFFUSE SHEETS HAVING VESICULAR NUCLEI	MALIGNANT TUMOR	POSITIVE	-	-	-	POSITIVE
63	554126	524/18	9995/18	SS	61	MALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	DUCTAL ADENOCARCINOMA	-	-	-	-	POSITIVE
64	586768	533/18	12067/18	NS	60	MALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	NEGATIVE
65	593624	554/18	12509/18	S	51	MALE	-	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	-
66	582317	567/18	12221/18	SP	68	MALE	-	BRAIN SOL	EXCISIONAL	TUMOR CELLS ARRANGED IN PAPILLAE LINED BY CELLS EXHIBITING NUCLEAR HYPERCHROMASIA	MALIGNANT TUMOR	POSITIVE	-	-	-	POSITIVE
67	513914	571/18	6825/18	GK	60	FEMALE	-	ENDOMETRIUM	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDS AND FOCAL PAPILLARY CONFIGURATION	ADENOCARCINOMA	-	-	-	NEGATIVE	POSITIVE
68	603838	576/18	13113/18	HK	57	FEMALE	-	CERVICAL LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN NEST AND FOCAL GLANDULAR CONFIGURATION	METASTATIC ADENOCARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
69	602300	581/19	12981/18	JN	53	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS WITH VESICULAR NUCLEI	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	NEGATIVE	NEGATIVE
70	602653	587/18	12932/18	DK	69	FEMALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN CLUSTERS	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
71	603847	604/18	13075/18	LD	34	FEMALE	-	COLON	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS ,LOBULES, NESTS AND FOCAL GLANDULAR CONFIGURATION	ADENOCARCINOMA	POSITIVE	-	-	-	NEGATIVE
72	616772	605/19	13787/18	GK	65	MALE	-	HIP BONE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS WITH MONOMORPHIC NUCLEI	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
73	617154	610/18	13847/18	P	64	FEMALE	-	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS WITH VESICULAR NUCLEI	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
74	608594	613/19	13519/18	JR	70	FEMALE	CEA: 0.48 ng/ml, CA19-9: 5.2 U/L	NASOPHARYNX	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	MALIGNANT NEOPLASM	POSITIVE	-	NEGATIVE	NEGATIVE	-
75	612486	618/18	13645/18	ZK	36	FEMALE	CA125: 53.1 U/ml	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS, SHEETS, GLANDS WITH CELLS HAVING CLEAR CYTOPLASM	CARCINOMA	-	-	-	-	POSITIVE
76	616092	633/18	14113/18	VS	50	FEMALE	CA125: 520U/L	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
77	603889	637/18	13325/18	DS	60	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN CLUSTERS AND GLANDS	CARCINOMA	POSITIVE	-	-	-	POSITIVE
78	626252	642/18	14627/18	RK	51	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND NESTS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
79	576038	644/18	14258/18	R	45	MALE	-	ENDOMETRIUM	EXCISIONAL	TUMOR CELLS ARRANGED IN GLAND AND SHEETS	ENDOMETROID CARCINOMA GRADE II	-	-	-	-	POSITIVE
80	620680	654/18	14584/18	BK	51	FEMALE	CA19-9: 103.4 I/L	LIVER SOL	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND SINGLY SCATTERED	CARCINOMA	-	-	-	-	POSITIVE
81	625150	655/19	14796/19	KS	47	MALE	CA19-9: 820U/ML	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN CLUSTERS AND FOCAL GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
58	544657	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-
59	560832	NEGATIVE	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	NEGATIVE	NEGATIVE	NEGATIVE	-	-	-
60	569488	NEGATIVE	NEGATIVE	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	560657	POSITIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
62	556444	NEGATIVE	-	NEGATIVE	-	POSITIVE	-	-	NEGATIVE	-	-	NEGATIVE	POSITIVE	NEGATIVE	NEGATIVE	-	-	-	-	-	-
63	554126	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	586768	NEGATIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-
65	593624	-	-	-	POSITIVE	POSITIVE	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-
66	582317	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	POSITIVE	-	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-
67	513914	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	-
68	603838	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	NEGATIVE
69	602300	NEGATIVE	-	-	POSITIVE	POSITIVE	POSITIVE	-	NEGATIVE	-	-	NEGATIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	-	NEGATIVE
70	602653	NEGATIVE	-	NEGATIVE	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	-	-
71	603847	POSITIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	50%	-
72	616772	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	NEGATIVE	-	-	-
73	617154	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
74	608594	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-
75	612486	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	NEGATIVE	-	-	-	-	-	-	-	-
76	616092	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	-	-	-	-
77	603889	NEGATIVE	NEGATIVE	NEGATIVE	-	NEGATIVE	NEGATIVE	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	NEGATIVE	-	-	-
78	626252	POSITIVE	POSITIVE	POSITIVE	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
79	576038	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	NEGATIVE	-	-	-	-	-	-	-	-
80	620680	NEGATIVE	POSITIVE	POSITIVE	-	-	NEGATIVE	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-
81	625150	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
58	544657	-	-	POSITIVE	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
59	560832	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
60	569488	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
61	560657	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
62	556444	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
63	554126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
64	586768	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM PROSTATE	SECONDARY
65	593624	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
66	582317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
67	513914	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
68	603838	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
69	602300	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	POSITIVE	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY UROTHELIAL IN ORIGIN	SECONDARY
70	602653	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
71	603847	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
72	616772	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
73	617154	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS SQUAMOUS CELL CARCINOMA LUNG	SECONDARY
74	608594	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
75	612486	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	CLEAR CELL CARCINOMA	PRIMARY
76	616092	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
77	603889	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
78	626252	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
79	576038	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
80	620680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
81	625150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
82	580936	658/18	11763/18	SD	68	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	NEGATIVE
83	628129	662/18	14565/18	TR	65	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS,ISLAND AND CORDS	NON SMALL CELL CARCINOMA	-	-	-	-	-
84	628551	667/18	14651/18	JK	48	FEMALE	CA125: 264.7 U/ml	OVARY	CORE BIOPSY	SINGLY SCATTERED TUMOR CELLS HAVING VESICULAR NUCLEI	CARCINOMA	POSITIVE	-	-	-	POSITIVE
85	630846	671/18	15113/18	AK	78	FEMALE	-	NASOPHARYNX	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SINGLY SCATTERED	SQUAMOUS CELL CARCINOMA	POSITIVE	-	-	-	-
86	628711	674/18	14607/18	DR	70	MALE	-	PROSTATE	EXCISIONAL	BACK TO BACK ARRANGEMENT OF GLNADS LINED BY SINGLE LAYER OF CELLS	ADENOCARCINOMA (3+3)	-	-	-	-	-
87	625447	680/18	15184/18	PJ	52	FEMALE	-	ENDOMETRIUM	INCISIONAL	BACK TO BACK ARRANGEMENT OF GLANDS	ADENOCARCINOMA	-	-	-	-	POSITIVE
88	643377	696/18	15740/18	HS	82	MALE	CA19-9: 67.9 U/L, CEA: 3.72 ng/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN WIDENED TRABACULAE	HEPATOCELLULAR CARCINOMA	POSITIVE	-	-	-	NEGATIVE
89	637487	008/19	15457/18	SS	67	MALE	-	NASOPHARYNX	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	CARCINOMA	POSITIVE	-	-	-	-
90	643440	009/19	97/19	HS	85	MALE	CEA 9.76 H ng/ml	LUNG	CORE BIOPSY	FOCAL AREA SHOWING GLANDULAR CONFIGURATION	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
91	580235	24/19	11610/18	PC	88	MALE	-	PROSTATE	CORE BIOPSY	OCCASIONAL GLANDS LINED BY SINGLE LAYER OF CELLS	SUSPICIOUS OF MALIGNANCY	-	-	-	-	-
92	604109	26/19	240/19	SB	82	FEMALE	CEA 60.83 H ng/ml	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	CARCINOMA	POSITIVE	-	-	-	POSITIVE
93	651955	38/19	368/19	JS	73	MALE	PSA 0.18 ng/ml	PROSTATE	CORE BIOPSY	BACK BACK ARRANGEMENT OF GLANDS LINED BY SINGLE LAYER OF CELLS	SUGGESTIVE OF MALIGNANCY	-	-	-	-	-
94	651060	42/19	346/19	BJ	61	FEMALE	-	OMENTUM	INCISIONAL	TUMOR CELLS PRESENT IN NESTS AND SHEETS	CARCINOMA	-	-	-	-	NEGATIVE
95	653575	34/19	434/19	AS	47	FEMALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS, NESTS AND CRIBRIFORM PATTERN	CARCINOMA	-	-	-	-	POSITIVE
96	654241	55/19	766/19	AH	52	MALE	CEA 15.31 H ng/ml, CA-19-9 1474.4 H U/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS, NESTS AND FOCAL GLANDULAR PATTERN	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
97	338721	60/19	866/19	YM	67	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	NON SMALL CELL CARCINOMA	POSITIVE	-	-	-	POSITIVE
98	335460	66/19	913/19	YP	77	MALE	PSA 15.36 H ng/ml	PROSTATE	CORE BIOPSY	BACK BACK ARRANGEMENT OF GLANDS LINED BY SINGLE LAYER OF CELLS	SUSPICIOUS OF MALIGNANCY	-	-	-	-	-
99	660030	75/19	933/19	SK	50	FEMALE	CEA 0.81 ng/ml	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS	ADENOCARCINOMA	-	-	-	-	POSITIVE
100	668557	101/19	1469/19	NS	67	FEMALE	CEA 8.91 H ng/ml , CA-19-9 13.9 U/ml	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS	CARCINOMA	-	-	-	-	POSITIVE
101	669678	113/19	1647/19	GK	60	FEMALE	CA-125 70.3 H U/ml	ENDOMETRIUM	EXCISIONAL	TUMOR CELLS ARRANGED IN PAPILLARY CONFIGURATION, GLANDS,NESTS AND SHEETS	CARCINOMA	POSITIVE	-	-	-	POSITIVE
102	673308	115/19	1930/19	GS	68	MALE	AFP :789.80 IU/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN WIDENED TRABACULAE WITH PROMINENT NUCLEOLI	CARCINOMA	POSITIVE	-	-	-	POSITIVE
103	675021	120/19	1874/19	SS	58	FEMALE	CEA 2.53 ng/ml,CA-19-9 518.8 H U/ml ,CA-125 898.3 H U/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN CLUSTERS, CORDS AND NESTS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
104	673046	122/19	1700/19	RK	45	FEMALE	CEA 96.57 H ng/ml	RECTUM	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	CARCINOMA	-	-	NEGATIVE	-	NEGATIVE
105	672698	136/19	1844/19	PS	60	MALE	-	PROSTATE	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS HAVING PROMINENT NUCLEOLI	ADENOCARCINOMA (5+5)	-	-	-	-	NEGATIVE
106	683381	155/19	2461/19	KK	45	FEMALE	CA-125 4.9 U/ml	OVARY	CORE BIOPSY	CELLULAR TUMOR IN DIFFUSE SHEETS AND ATTEMPTED GLAND FORMATION	HIGH GRADE SEROUS CARCINOMA	POSITIVE	-	-	-	POSITIVE
107	690217	161/19	2878/19	VG	59	FEMALE	CA-125 1013.7 H U/ml ,CEA 0.71 ng/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND FOCAL GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
108	687362	168/19	2681/19	KV	52	FEMALE	-	CERVIX	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS	MALIGNANT NEOPLASM	-	-	-	-	NEGATIVE
109	675752	174/19	2490/19	GK	46	MALE	CEA 2.28 ng/ml 0.0 to 3.0,AFP1.24 IU/ml CA-19-9 12.0 U/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS, NESTS AND FOCAL GLANDULAR PATTERN	CARCINOMA	-	-	-	-	POSITIVE
110	31137	195/19	3184/19	MK	66	FEMALE	CA-125 6.0 U/ml INHIBIN-A 44.2 pg/ml	ENDOMETRIUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS	MALIGNANT NEOPLASM	-	NEGATIVE	-	-	NEGATIVE
111	691352	199/19	3387/19	SS	52	MALE	-	SIGMOID COLON	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	CARCINOMA	POSITIVE	-	-	-	NEGATIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
82	580936	NEGATIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	POSITIVE	-	-	-
83	628129	-	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-
84	628551	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
85	630846	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	NEGATIVE
86	628711	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
87	625447	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-
88	643377	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE
89	637487	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
90	643440	NEGATIVE	-	-	-	-	-	POSITIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-
91	580235	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
92	604109	NEGATIVE	-	-	NEGATIVE	-	-	-	POSITIVE	NEGATIVE	-	POSITIVE	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
93	651955	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
94	651060	POSITIVE	POSITIVE	POSITIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-
95	653575	POSITIVE	NEGATIVE	-	-	-	POSITIVE	NEGATIVE	NEGATIVE	-	-	NEGATIVE	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-
96	654241	NEGATIVE	POSITIVE	POSITIVE	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
97	338721	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-
98	335460	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-
99	660030	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	-	POSITIVE	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	-	-	-	70%	-
100	668557	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-
101	669678	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	-	-	-	80%	-
102	673308	NEGATIVE	-	NEGATIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	NEGATIVE	-	-	POSITIVE
103	675021	NEGATIVE	-	NEGATIVE	POSITIVE	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	-	-
104	673046	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-
105	672698	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-
106	683381	NEGATIVE	-	NEGATIVE	-	NEGATIVE	-	-	-	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	90%	-
107	690217	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	-	-
108	687362	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	95%	-
109	675752	NEGATIVE	-	NEGATIVE	-	NEGATIVE	-	-	POSITIVE	-	NEGATIVE	POSITIVE	-	-	-	-	-	NEGATIVE	-	-	NEGATIVE
110	31137	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	NEGATIVE	NEGATIVE	-	-	25%	-
111	691352	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	75%	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
82	580936	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM PROSTATE	SECONDARY
83	628129	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
84	628551	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MUCINOUS CARCINOMA	PRIMARY
85	630846	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
86	628711	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
87	625447	-	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
88	643377	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	WELL DIFFERENTIATED HEPATOCELLULAR CARCINOMA	PRIMARY
89	637487	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
90	643440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
91	580235	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
92	604109	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
93	651955	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
94	651060	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY
95	653575	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY UROTHELIAL IN ORIGIN	SECONDARY
96	654241	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
97	338721	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
98	335460	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
99	660030	-	-	NEGATIVE	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
100	668557	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
101	669678	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	SEROUS ADENOCARCINOMA	PRIMARY
102	673308	-	-	-	-	-	-	-	NEGATIVE	-	-	-	NEGATIVE	-	-	-	-	WELL DIFFERENTIATED HEPATOCELLULAR CARCINOMA	PRIMARY
103	675021	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
104	673046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
105	672698	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
106	683381	-	-	NEGATIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
107	690217	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
108	687362	-	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	HPV ASSOCIATED NON KERATINISING SQUAMOUS CELL CARCINOMA	PRIMARY
109	675752	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
110	31137	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	POSITIVE	-	-	-	-	-	SEROUS ADENOCARCINOMA	PRIMARY
111	691352	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
112	690234	200/19	3168/19	RK	34	FEMALE	CA-125 184.5 H U/ml	OVARY	INCISIONAL	SHEETS AND NESTS OF TUMOR CELLS WITH CLEAR CYTOPLASM	CARCINOMA	POSITIVE	-	-	-	POSITIVE
113	688351	210/19	3666/19	MS	60	MALE	-	ESOPHAGUS	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS , NESTS AND SINGLY SCATTERED	MALIGNANT NEOPLASM	-	-	NEGATIVE	-	POSITIVE
114	701771	211/19	3681/19	RS	66	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS , CORDS AND ATTEMPTED GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	POSITIVE
115	697519	212/19	3406/19	RK	53	MALE	-	NASOPHARYNX	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS, ISLANDS, PSEUDOGLANDULAR CONFIGURATION	SQUAMOUS CELL CARCINOMA	POSITIVE	-	-	-	-
116	701588	219/19	3750/19	NS	54	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN FOCAL GLANDULAR CONFIGURATION	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
117	703650	222/19	3908/19	SK	40	FEMALE	-	ENDOMETRIUM	EXCISIONAL	BACK TO BACK ARRANGEMENT OF GLANDS WITH NUCLEAR STRATIFICATION	ADENOCARCINOMA ENDOMETRIUM	-	-	-	-	POSITIVE
118	695347	234/19	3326/19	DK	72	MALE	CEA 2.63 ng/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	NEGATIVE
119	701544	245/19	3896/19	MK	71	FEMALE	-	LUNG	CORE BIOPSY	CLUSTERS OF PLEOMORPHIC CELLS HAVING HYPERCHROMATIC NUCLEI	CARCINOMA	-	-	-	-	-
120	695031	247/19	3305/19	PK	60	FEMALE	-	ENDOMETRIUM	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	ADENOCARCINOMA	POSITIVE	-	-	-	POSITIVE
121	713402	255/19	4500/19	KK	48	FEMALE	CA-19-9 5553 H U/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS IN A FIBROUS STROMA	CARCINOMA	-	-	-	-	POSITIVE
122	716774	263/19	4709/19	MB	45	FEMALE	-	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS,TUBULES AND PAPILLAE WITH CLEAR CYTOPLASM	CLEAR CELL CARCINOMA-OVARY	POSITIVE	-	-	-	-
123	713040	281/19	4507/19	DK	60	FEMALE	CA-125 30.2 U/ml	CERVIX	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS, NESTS AND FOCAL GLANDULAR PATTERN	ADENOCARCINOMA	-	-	-	-	POSITIVE
124	704390	282/19	4696/19	BR	75	MALE	CA-19-9 79.1 H U/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	POSITIVE
125	559386	293/19	5230/19	GC	44	MALE	CA-19-9 553.0 H U/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN TRABECULAR PATTERN AND FOCAL ACINAR ARRANGEMENT	CARCINOMA	-	-	-	-	POSITIVE
126	720720	294/19	5176/19	SK	72	FEMALE	CEA 1.31 ng/ml ,CA-19-9 16.8 U/ml,CA-125 290.8 H U/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN CLUSTERS , NESTS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
127	660458	295/19	899/19	RR	58	FEMALE	-	ENDOMETRIUM	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDS,SHEETS AND FOCAL PAPILLARY CONFIGURATION	ADENOCARCINOMA	-	-	-	-	POSITIVE
128	372106	309/19	5307/19	DK	46	FEMALE	CA-125 59.0 H U/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND NESTS HAVING HYPERCHROMATIC NUCLEUS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
129	725037	322/19	5433/19	CL	50	FEMALE	CA-125 37.7 H U/ml	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN PAPILLAE ALONG WITH CONFLUENT GLANDS WITH MUCIN SECREATING EPITHELIUM	CARCINOMA	-	-	-	-	POSITIVE
130	676472	327/19	5630/19	S	58	MALE	CEA 7.81 H ng/ml	BRAIN SOL	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND SINGLY SCATTERED HAVING VESICULAR NUCLEI	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
131	734395	340/19	6195/19	K	60	MALE	CA-19-9 24500.0 H U/ml ,CEA 11.54 H ng/ml	ABDOMINAL LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND SINGLY SCATTERED CELLS HAVING VESICULAR NUCLEI	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
132	730666	351/19	5830/19	HK	65	FEMALE	-	ENDOMETRIUM	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDS AND FOCAL PAPILLARY CONFIGURATION	ADENOCARCINOMA	POSITIVE	-	-	-	-
133	727064	356/19	6167/19	RV	49	FEMALE	CA-125 6.2 U/ml ,CA-19-9 6.4 U/ml	OVARY	CORE BIOPSY	TUMOR CELLS ARRANGED IN PAPILLAE ALONG WITH CONFLUENT GLANDS WITH MUCIN SECREATING EPITHELIUM	MUCINOUS CARCINOMA	-	-	-	-	POSITIVE
134	660578	357/19	1892/19	KK	61	FEMALE	CA-125 1008.3 H U/ml	OVARY	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	CARCINOMA	-	-	-	-	POSITIVE
135	336501	359/19	6454/19	JC	76	FEMALE	PSA 7.10 H ng/ml, CA-19-9 13.8 U/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN WIDENED TRABACULAE WITH PROMINENT NUCLEOLI	CARCINOMA	-	-	-	-	NEGATIVE
136	731854	374/19	5992/19	JV	83	FEMALE	CEA 1.61 ng/ml	COLON	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDS	ADENOCARCINOMA-NOS	-	-	-	-	NEGATIVE
137	736950	385/19	6307/19	PK	50	FEMALE	CA-125 8.1 U/ml	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN BACK TO BACK ARRANGEMENT OF GLANDS	CARCINOMA	-	-	-	-	POSITIVE
138	47333	397/19	7072/19	PC	64	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS PRESENT IN NESTS IN FIBROCOLLAGENOUS STROMA	NON SMALL CELL CARCINOMA	POSITIVE	-	-	-	-

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
112	690234	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	POSITIVE	-	NEGATIVE	-	-	-	-	-	75%	-
113	688351	-	-	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
114	701771	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	NEGATIVE	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
115	697519	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
116	701588	NEGATIVE	-	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-
117	703650	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	90%	-
118	695347	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
119	701544	-	-	-	-	NEGATIVE	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-
120	695031	NEGATIVE	-	-	-	-	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	20%	-
121	713402	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	NEGATIVE
122	716774	-	-	POSITIVE	-	-	-	-	-	-	-	POSITIVE	-	NEGATIVE	-	-	-	-	-	-	-
123	713040	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	POSITIVE	-	NEGATIVE	-	-	-	-	-	70%	-
124	704390	-	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	NEGATIVE	-	-	NEGATIVE
125	559386	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE
126	720720	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	60%	-
127	660458	-	-	-	-	-	-	-	-	-	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	-	-	-	60%	-
128	372106	NEGATIVE	-	NEGATIVE	-	-	-	-	NEGATIVE	-	POSITIVE	POSITIVE	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-
129	725037	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	35%	-
130	676472	NEGATIVE	POSITIVE	NEGATIVE	-	-	NEGATIVE	-	POSITIVE	-	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-
131	734395	NEGATIVE	POSITIVE	POSITIVE	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
132	730666	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-
133	727064	POSITIVE	-	NEGATIVE	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	-
134	660578	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	30%	-
135	336501	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE
136	731854	POSITIVE	-	POSITIVE	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
137	736950	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	60%	-
138	47333	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
112	690234	-	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	CLEAR CELL CARCINOMA	PRIMARY
113	688351	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
114	701771	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
115	697519	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
116	701588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
117	703650	-	-	POSITIVE	-	-	-	-	NEGATIVE	-	POSITIVE	NEGATIVE	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
118	695347	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY
119	701544	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
120	695031	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
121	713402	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
122	716774	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	CLEAR CELL CARCINOMA	PRIMARY
123	713040	-	-	NEGATIVE	-	-	-	-	POSITIVE	-	NEGATIVE	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
124	704390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
125	559386	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	HEPATOCELLULAR CARCINOMA	PRIMARY
126	720720	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
127	660458	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
128	372106	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
129	725037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MUCINOUS CARCINOMA	PRIMARY
130	676472	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
131	734395	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
132	730666	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
133	727064	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MUCINOUS CARCINOMA	PRIMARY
134	660578	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
135	336501	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	HEPATOCELLULAR CARCINOMA	PRIMARY
136	731854	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
137	736950	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
138	47333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
139	420437	417/19	5262/19	UR	66	FEMALE	CA-125 862.2 H U/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN CLUSTERS AND NESTS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
140	628270	418/19	7543/19	SK	61	MALE	CA-19-9 510.1 H U/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
141	736982	420/19	6947/19	P	47	MALE	CA-19-9 15.4 U/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS SURROUNDED BY ABUNDANT FIBROUS STROMA	CARCINOMA	-	-	-	-	POSITIVE
142	749587	428/19	7668/19	SS	60	MALE	-	STOMACH	EXCISIONAL	SINGLY SCATTERED SIGNET RING CELLS	SIGNET RING CELL CARCINOMA	POSITIVE	-	-	-	-
143	690561	453/19	7557/19	SK	76	MALE	-	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	SINGLY SCATTERED TUMOR CELLS HAVING VESICULAR NUCLEI	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
144	754334	454/19	7839/19	AK	70	FEMALE	CA-19-9 7.5 U/ml ,CA-125 448.7 H U/ml	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
145	755851	489/19	8632/19	BK	48	FEMALE	CEA 6.93 H ng/ml	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND SINGLY SCATTERED	CARCINOMA	-	-	-	-	-
146	761780	491/19	8316/19	AK	68	FEMALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	CARCINOMA	-	-	-	-	POSITIVE
147	96114	488/19	8603/19	SA	74	FEMALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	CARCINOMA	-	-	-	-	POSITIVE
148	762014	505/19	8634/19	NB	68	FEMALE	-	ENDOMETRIUM	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND FOCAL PAPILLARY CONFIGURATION	CARCINOMA	-	-	-	-	POSITIVE
149	748466	500/19	8754/19	R	66	MALE	CA-19-9 166.0 H U/ml,CEA 5.28 H ng/ml	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN WIDENED TRABACULAE AND FOCAL ACINAR ARRANGEMENT	HEPATOCELLULAR CARCINOMA	POSITIVE	-	-	-	NEGATIVE
150	427180	478/19	8200/19	H	75	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	NON SMALL CELL CARCINOMA	-	-	-	-	-
151	651060	479/19	5550/19	BJ	61	FEMALE	-	OMENTUM	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	NEGATIVE
152	758367	484/19	8286/19	MK	33	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND OCCASIONAL GLANDS	NON SMALL CELL CARCINOMA	-	-	-	-	-
153	96114	488/19	8604/19	SK	74	MALE	CA 19-9: 2040	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	CARCINOMA	-	-	-	-	POSITIVE
154	761780	491/19	8316/19	AK	68	MALE	-	URINARY BLADDER	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS	UROTHELIAL CARCINOMA	-	-	-	-	POSITIVE
155	761697	498/19	8318/19	PG	30	FEMALE	-	OVARY	EXCISIONAL	CYSTS LINED BY TALL COLUMNAR MUCIN SECRETORY CELLS	MUCINOUS CARCINOMA	-	-	-	-	POSITIVE
156	748466	500/19	8754/19	RS	66	MALE	CA19-9:166	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN TRABACULAR PATTERN	HEPATOCELLULAR CARCINOMA	POSITIVE	-	-	-	NEGATIVE
157	762014	505/19	8634/19	NB	68	FEMALE	-	ENDOMETRIUM	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND FOCAL PAPILLARY CONFIGURATION	SEROUS CARCINOMA	-	-	-	-	POSITIVE
158	764475	506/19	8590/19	K	72	FEMALE	-	COLON	EXCISIONAL	TUMOR CELLS ARRANGED NESTS AND SHEETS	CARCINOMA	POSITIVE	-	-	-	NEGATIVE
159	698620	511/19	7123/19	SS	67	MALE	-	STOMACH	INCISIONAL	TUMOR CELLS ARRANGED IN CORDS AND GLANDS WITH CELLS HAVING INTRACYTOPLASMIC MUCIN	ADENOCARCINOMA	-	-	-	-	NEGATIVE
160	767701	513/19	8709/19	HS	65	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND FOCAL GLANDULAR CONFIGURATION	CARCINOMA	POSITIVE	-	-	-	POSITIVE
161	770036	516/19	8978/19	CL	69	MALE	CEA: 493.2	HIP BONE	EXCISIONAL	TUMOR CELLS ARRANGED IN FORM OF SHEETS AND FOCAL GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
162	771745	518/19	8994/19	RC	65	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS PRESENT IN NESTS AND FOCAL GLANDULAR PATTERN	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
163	772844	530/19	9162/19	NM	62	MALE	PSA: 151.0	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	CARCINOMA	POSITIVE	-	NEGATIVE	-	NEGATIVE
164	772722	535/19	9017/19	SR	61	FEMALE	CA125: 114.7	ENDOMETRIUM	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	POSITIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
139	420437	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	80%	-
140	628270	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	NEGATIVE	-	-	-
141	736982	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	-	NEGATIVE
142	749587	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
143	690561	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-
144	754334	NEGATIVE	-	NEGATIVE	NEGATIVE	NEGATIVE	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-
145	755851	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	NEGATIVE	-	-	-	-
146	761780	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
147	96114	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
148	762014	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
149	748466	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE
150	427180	-	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
151	651060	POSITIVE	-	POSITIVE	-	-	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-
152	758367	-	-	-	NEGATIVE	NEGATIVE	-	-	POSITIVE	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-
153	96114	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	NEGATIVE	NEGATIVE	-	-	10%	-
154	761780	POSITIVE	NEGATIVE	NEGATIVE	-	POSITIVE	POSITIVE	-	NEGATIVE	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-	-
155	761697	POSITIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-
156	748466	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE
157	762014	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
158	764475	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	90%	-
159	698620	POSITIVE	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	60%	-
160	767701	POSITIVE	-	-	-	-	POSITIVE	-	NEGATIVE	-	-	NEGATIVE	NEGATIVE	-	-	NEGATIVE	NEGATIVE	-	-	-	-
161	770036	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-
162	771745	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-
163	772844	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-
164	772722	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
139	420437	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
140	628270	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
141	736982	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
142	749587	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SIGNET RING CELL CARCINOMA	PRIMARY
143	690561	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS SQUAMOUS CELL CARCINOMA LUNG	SECONDARY
144	754334	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
145	755851	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
146	761780	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
147	96114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
148	762014	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	NEGATIVE	-	-	-	-	-	SEROUS ADENOCARCINOMA	PRIMARY
149	748466	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	WELL DIFFERENTIATED HEPATOCELLULAR CARCINOMA	PRIMARY
150	427180	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
151	651060	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY
152	758367	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
153	96114	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
154	761780	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	UROTHELIAL CARCINOMA	PRIMARY
155	761697	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	MUCINOUS CARCINOMA	PRIMARY
156	748466	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	WELL DIFFERENTIATED HEPATOCELLULAR CARCINOMA	PRIMARY
157	762014	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	POSITIVE	-	-	-	-	-	SEROUS ADENOCARCINOMA	PRIMARY
158	764475	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
159	698620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
160	767701	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY UROTHELIAL IN ORIGIN	SECONDARY
161	770036	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
162	771745	-	-	NEGATIVE	-	-	-	-	-	-	-	-	1+	-	-	-	-	ADENOCARCINOMA	PRIMARY
163	772844	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM PROSTATE	SECONDARY
164	772722	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
165	776577	556/19	9371/19	HK	65	FEMALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NODULAR FASHION	CARCINOMA	POSITIVE	-	-	-	NEGATIVE
166	771156	563/19	9316/19	KD	55	FEMALE	-	ENDOMETRIUM	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDS, PAPILLAE, NESTS AND SHEETS	CARCINOMA	-	-	-	-	-
167	783371	582/19	9925/19	SS	42	MALE	CEA: 88.20, CA19-9: 56.3	COLON	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDS	ADENOCARCINOMA	-	-	-	-	NEGATIVE
168	777580	589/19	9522/19	P	42	FEMALE	-	FALLOPIAN TUBE	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDS,NESTS AND PAPILLARY CONFIGURATION	ADENOCARCINOMA	-	-	-	-	POSITIVE
169	380115	591/19	9502/19	NN	74	MALE	-	URINARY BLADDER	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS HAVING HYPERCHROMATIC NUCLEI	UROTHELIAL CARCINOMA	POSITIVE	-	NEGATIVE	-	POSITIVE
170	779388	602/19	9725/19	MS	55	MALE	-	MANDIBLE	EXCISIONAL	TUMOR CELLS ARRANGED IN CRIBRIFORM AND TRABACULAR PATTERN	ADENOID CYSTIC CARCINOMA	-	POSITIVE	-	-	POSITIVE
171	789187	609/19	9825/19	GS	72	MALE	PSA: 1.65	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND CLUSTERS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	NEGATIVE
172	791621	618/19	10414/19	CR	76	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	NON SMALL CELL CARCINOMA	-	-	-	-	-
173	786468	627/19	10140/19	JP	76	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDULAR CONFIGURATION	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
174	332291	646/19	10823/19	RK	70	MALE	-	MANDIBLE	CORE BIOPSY	TUMOR CELLS ARRANGED IN CRIBRIFORM AND TRABACULAR PATTERN	ADENOID CYSTIC CARCINOMA	-	POSITIVE	-	-	POSITIVE
175	801086	649/19	10871/19	HS	69	MALE	CEA: 2.76	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	CARCINOMA	-	-	-	-	-
176	787337	652/19	10572/19	OP	69	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	NON SMALL CELL CARCINOMA	-	-	-	-	-
177	795829	661/19	10647/19	SK	46	MALE	CEA: 0.95	COLON	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDS	ADENOCARCINOMA	-	-	-	-	-
178	763448	662/19	10507/19	G	54	FEMALE	CA125: 23.9	OVARY	INCISIONAL	TUMOR CELLS ARRANGED AS PAPILLARY CONFIGURATION AND GLANDS	ADENOCARCINOMA	-	-	-	NEGATIVE	POSITIVE
179	802260	671/19	10989/19	PL	79	MALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS PRESENT IN NESTS AND SHEETS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	NEGATIVE
180	646421	676/19	11401/19	TK	40	FEMALE	CA19-9: 0.8 U/ML	COLON	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	ADENOCARCINOMA	-	-	-	-	NEGATIVE
181	709186	689/19	11470/19	DJ	79	MALE	CEA: 51.3	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	NON SMALL CELL CARCINOMA	-	-	-	-	-
182	806739	692/19	11308/19	BK	70	MALE	-	STOMACH	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	CARCINOMA	-	-	-	-	NEGATIVE
183	811785	699/19	11566/19	JR	65	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND NESTS HAVING HYPERCHROMATIC NUCLEUS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
184	811690	721/19	11714/19	CS	59	MALE	-	URINARY BLADDER	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND SMALL CLUSTERS	UROTHELIAL CARCINOMA	POSITIVE	-	-	-	POSITIVE
185	811260	726/19	11863/19	AG	62	FEMALE	AFP: 2.21	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS HAVING VESICULAR NUCLEI	NON SMALL CELL CARCINOMA	-	-	-	-	-
186	817349	739/19	12021/19	DD	60	FEMALE	-	ESOPHAGUS	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	SQUAMOUS CELL CARCINOMA	-	-	-	-	NEGATIVE
187	817999	742/19	11963/19	SG	49	FEMALE	CA125: 533.3	OVARY	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS, PAPILLARY AND FEW GLANDS	SEROUS CARCINOMA OVARY	-	-	-	-	POSITIVE
188	807450	760/19	11860/19	BS	40	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN FORM OF PAPILLAE AND GLANDS	NON SMALL CELL CARCINOMA	-	-	-	-	-
189	814998	784/19	12188/19	BS	59	FEMALE	-	ENDOMETRIUM	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS, SHEETS WITH POLYGONAL CELLS	CARCINOMA	-	POSITIVE	-	NEGATIVE	POSITIVE
190	827548	790/19	12546/19	B	68	MALE	-	COLON	INCISIONAL	LARGE CELLS HAVING HYPERCHROMATIC NUCLEI AND ABUNDANT CLEAR CYTOPLASM	CARCINOMA	POSITIVE	-	-	-	NEGATIVE
191	831177	792/19	12774/19	KS	57	MALE	-	URINARY BLADDER	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS HAVING ROUND VESICULAR NUCLEI	CARCINOMA	POSITIVE	-	-	-	POSITIVE
192	787928	803/19	12665/19	PS	58	MALE	CEA: 19.7	COLON	CORE BIOPSY	TUMOR CELLS ARRANGED AS IRREGULAR GLANDS	CARCINOMA	-	-	-	-	NEGATIVE
193	828150	807/19	12611/19	R	73	MALE	CEA: 561.76	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	CARCINOMA	POSITIVE	-	-	-	POSITIVE
194	835491	817/19	13087/19	RK	63	MALE	CA125: 1848.5	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS, PAPILLAE AND FOCAL GLANDS	SEROUS CARCINOMA	-	-	-	-	-
195	833460	821/19	13123/19	BP	50	MALE	CEA: 3.74	STOMACH	EXCISIONAL	SHEETS OF TUMOR CELLS HAVING MODERATE CYTOPLASM	SIGNET RING CELL CARCINOMA	POSITIVE	-	-	-	NEGATIVE
196	832314	825/19	12909/19	SD	47	MALE	CEA: 20.63	RECTUM	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	CARCINOMA	-	-	-	-	NEGATIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
165	776577	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	35%	POSITIVE
166	771156	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
167	783371	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
168	777580	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	60%	-
169	380115	POSITIVE	-	-	-	POSITIVE	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
170	779388	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	55%	-
171	789187	NEGATIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-
172	791621	-	-	-	-	-	-	-	POSITIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
173	786468	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	-	-	-	-
174	332291	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	12%	-
175	801086	-	-	-	-	-	-	-	POSITIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
176	787337	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
177	795829	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
178	763448	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	-
179	802260	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
180	646421	POSITIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
181	709186	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-
182	806739	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
183	811785	NEGATIVE	-	NEGATIVE	-	-	-	-	POSITIVE	-	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-
184	811690	POSITIVE	-	-	-	POSITIVE	POSITIVE	-	NEGATIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
185	811260	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-
186	817349	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
187	817999	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	80%	-
188	807450	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
189	814998	-	-	-	-	POSITIVE	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
190	827548	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
191	831177	POSITIVE	-	-	-	POSITIVE	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	NEGATIVE	-	-	-	-
192	787928	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-
193	828150	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	POSITIVE	NEGATIVE	NEGATIVE	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-
194	835491	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	40%	-
195	833460	NEGATIVE	POSITIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
196	832314	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
165	776577	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	POSITIVE	-	-	-	WELL DIFFERENTIATED HEPATOCELLULAR CARCINOMA	PRIMARY
166	771156	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
167	783371	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
168	777580	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
169	380115	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	UROTHELIAL CARCINOMA	PRIMARY
170	779388	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	HIGH GRADE ADENOID CYSTIC CARCINOMA	PRIMARY
171	789187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM PROSTATE	SECONDARY
172	791621	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
173	786468	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
174	332291	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HIGH GRADE ADENOID CYSTIC CARCINOMA	PRIMARY
175	801086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
176	787337	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
177	795829	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	ADENOCARCINOMA	PRIMARY
178	763448	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
179	802260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY
180	646421	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
181	709186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
182	806739	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
183	811785	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
184	811690	-	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	UROTHELIAL CARCINOMA	PRIMARY
185	811260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
186	817349	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
187	817999	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
188	807450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
189	814998	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
190	827548	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	SIGNET RING CELL CARCINOMA	PRIMARY
191	831177	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	UROTHELIAL CARCINOMA	PRIMARY
192	787928	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	ADENOCARCINOMA	PRIMARY
193	828150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
194	835491	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
195	833460	-	-	-	-	-	-	-	-	-	-	-	2+	-	-	-	-	SIGNET RING CELL CARCINOMA	PRIMARY
196	832314	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
197	838963	834/19	13238/19	K	62	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND GLANDS	NON SMALL CELL CARCINOMA	-	-	-	-	-
198	804578	771/19	12611/19	RS	73	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
199	821306	783/19	12662/19	MS	54	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	NON SMALL CELL CARCINOMA	-	-	-	-	-
200	826584	794/19	12789/19	KK	55	FEMALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN PAPILLARY CONFIGURATION	CARCINOMA	-	-	-	NEGATIVE	POSITIVE
201	687915	840/19	13178/19	SB	56	FEMALE	CA19-9: 25200	HIP BONE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION AND NESTS	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	-	-	POSITIVE
202	842061	859/19	13422/19	KC	63	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN IRREGULAR GLANDS	CARCINOMA	-	-	-	-	POSITIVE
203	844421	864/19	13757/19	NS	56	FEMALE	CA19-9: 2022.0	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND FOCAL TRABACULAE	CARCINOMA	POSITIVE	-	-	NEGATIVE	POSITIVE
204	847545	867/19	13741/19	RS	32	FEMALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN PAPILLAE, NESTS AND OCCASIONAL GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
205	215437	884/19	13880/19	DS	53	MALE	CA19-9: 42.0	DUODENUM	EXCISIONAL	LACTEALS FILLED WITH TUMOR CELLS HAVING HYPERCHROMATIC NUCLEI	CARCINOMA	-	-	-	-	POSITIVE
206	851451	888/19	13861/19	PL	46	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS, CORDS AND ATTEMPTED GLAND	NON SMALL CELL CARCINOMA	-	-	-	-	-
207	856849	894/19	14267/19	K	43	FEMALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN CORDS AND SHEETS	METASTATIC CARCINOMATOUS DEPOSITS	POSITIVE	-	NEGATIVE	-	POSITIVE
208	861698	927/19	14671/19	SD	74	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	NON SMALL CELL CARCINOMA	-	-	-	-	-
209	860287	909/19	14598/19	SS	80	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS PRESENT IN GLANDULAR CONFIGURATION	ADENOCARCINOMA	-	-	-	-	-
210	622329	918/19	14612/19	BD	59	FEMALE	CA125:9.6	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDS , NESTS AND PAPILLAE	ADENOCARCINOMA	-	-	-	-	-
211	858879	925/19	14809/19	DK	52	FEMALE	-	CERVIX	EXCISIONAL	TUMOR CELLS ARRANGED IN CORDS, SHEETS AND CLUSTERS	ADENOSQUAMOUS CARCINOMA	-	-	-	-	POSITIVE
212	853605	900/19	14012/19	SG	69	MALE	-	PROSTATE	CORE BIOPSY	BACK TO BACK ARRANGEMENT OF GLANDS LINED BY SINGLE LAYER OF CELLS	ADENOCARCINOMA(4+3)	-	-	-	-	-
213	858687	928/19	14447/19	N	59	FEMALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED AS IRREGULAR GLANDS	ADENOCARCINOMA	POSITIVE	-	-	-	POSITIVE
214	821306	783/19	12662/19	MS	54	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	NON SMALL CELL CARCINOMA	-	-	-	-	-
215	826584	794/19	12789/19	KK	55	FEMALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN PAPILLARY CONFIGURATION	ADENOCARCINOMA	-	-	-	NEGATIVE	POSITIVE
216	866761	941/19	15077/19	CJ	64	FEMALE	CEA: 6.54 ng/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS, NESTS AND FEW MICROPAPILLAE	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
217	851647	942/19	14540/19	VS	59	FEMALE	-	ENDOMETRIUM	INCISIONAL	TUMOR CELLS ARRANGED IN PAPILLARY , TUBULAR AND FOCAL SOLID PATTERN	ENDOMETROID CARCINOM GRADE I	-	-	-	-	-
218	863822	943/19	14775/19	IS	73	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	NON SMALL CELL CARCINOMA	-	-	-	-	-
219	862095	946/19	14944/19	PS	68	MALE	-	PROSTATE	CORE BIOPSY	BACK TO BACK ARRANGEMENT OF GLANDS	ADENOCARCINOMA (4+4)	-	-	-	-	-
220	849782	949/19	15178/19	RK	61	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN TRABACULAR PATTERN	HEPATOCELLULAR CARCINOMA	POSITIVE	-	-	-	NEGATIVE
221	868507	951/19	15255/19	SS	65	MALE	-	KIDNEY	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS, HAVING ABUNDANT CLEAR CYTOPLASM	RENAL CELL CARCINOMA	POSITIVE	-	-	NEGATIVE	-
222	868533	959/19	15320/19	R	53	FEMALE	-	CERVICAL LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS, SHEETS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
223	203188	968/19	14854/19	SG	69	FEMALE	-	ENDOMETRIUM	EXCISIONAL	NEST, SHEETS AND FOCAL GLANDULAR CONFIGURATION	ENDOMETROID CARCINOMA	-	-	-	-	-
224	864279	975/19	14836/19	PS	69	FEMALE	-	CERVIX	INCISIONAL	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	ADENOCARCINOMA	-	-	-	-	POSITIVE
225	866801	005/20	15167/19	NA	60	MALE	-	URINARY BLADDER	EXCISIONAL	TUMOR CELLS ARRANGED IN NEST WITH INDIVIDUAL CELL KERATINISATION	SQUAMOUS CELL CARCINOMA	-	-	-	-	NEGATIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
197	838963	-	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
198	804578	NEGATIVE	-	NEGATIVE	NEGATIVE	NEGATIVE	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-
199	821306	-	-	-	-	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
200	826584	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
201	687915	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-
202	842061	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-
203	844421	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	NEGATIVE	NEGATIVE	-	-	-	NEGATIVE
204	847545	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	90%	-
205	215437	NEGATIVE	POSITIVE	NEGATIVE	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
206	851451	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
207	856849	NEGATIVE	-	-	-	-	-	NEGATIVE	-	-	POSITIVE	-	-	POSITIVE	-	NEGATIVE	NEGATIVE	-	-	40%	-
208	861698	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	NEGATIVE	NEGATIVE	-	-	-	-
209	860287	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
210	622329	-	-	NEGATIVE	-	-	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	50%	-
211	858879	POSITIVE	POSITIVE	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	-
212	853605	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
213	858687	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
214	821306	-	-	-	-	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
215	826584	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
216	866761	POSITIVE	-	-	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	60%	-
217	851647	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
218	863822	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	-	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-
219	862095	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	849782	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE
221	868507	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-
222	868533	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
223	203188	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
224	864279	POSITIVE	-	-	POSITIVE	POSITIVE	-	-	-	-	POSITIVE	-	-	NEGATIVE	-	-	-	-	-	-	-
225	866801	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
197	838963	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
198	804578	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
199	821306	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
200	826584	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
201	687915	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
202	842061	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
203	844421	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
204	847545	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
205	215437	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
206	851451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
207	856849	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
208	861698	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
209	860287	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
210	622329	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
211	858879	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	NEGATIVE	NEGATIVE	-	ADENOSQUAMOUS CARCINOMA	PRIMARY
212	853605	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
213	858687	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
214	821306	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
215	826584	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
216	866761	-	-	-	-	-	-	-	-	-	-	-	2+	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
217	851647	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
218	863822	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
219	862095	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
220	849782	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	WELL DIFFERENTIATED HEPATOCELLULAR CARCINOMA	PRIMARY
221	868507	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	CLEAR CELL RENAL CELL CARCINOMA	PRIMARY
222	868533	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
223	203188	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
224	864279	-	-	NEGATIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	ADENOSQUAMOUS CARCINOMA	PRIMARY
225	866801	-	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
226	862142	008/20	14738/19	KD	70	FEMALE	-	OVARY	INCISIONAL	TUMOR CELLS ARRANGED SHEETS AND GLANDULAR CONFIGURATION	HIGH GRADE SEROUS CARCINOMA	-	-	-	-	-
227	870107	009/20	15480/19	MS	40	MALE	CA19-9: 320.9 U/ml, CEA: 71 ng/ml	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND CLUSTERS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
228	715808	011/20	102/20	GS	65	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS HAVING ABUNDANT CLEAR CYTOPLASM	CARCINOMA	-	-	-	-	-
229	715808	012/20	103/20	GS	65	MALE	-	KIDNEY	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS SEPARATED BY FIBROVASCULAR SEPTAE	CLEAR CELL RENAL CELL CARCINOMA	POSITIVE	-	-	-	-
230	872233	16/20	15551/19	JK	65	MALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS HAVING VESICULAR NUCLEI	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
231	872924	21/20	15545/19	TD	70	FEMALE	-	ENDOMETRIUM	INCISIONAL	BACK TO BACK ARRANGEMENT OF GLANDS	ENDOMETROID CARCINOMA	-	-	-	-	-
232	755699	26/20	15154/19	SC	66	MALE	-	URINARY BLADDER	CORE BIOPSY	CELLULAR TUMOR ARRANGED IN SHEETS AND NESTS	CARCINOMA	-	-	-	-	POSITIVE
233	877913	33/20	354/20	KL	72	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	NON SMALL CELL CARCINOMA	-	-	-	-	-
234	880055	40/20	478/20	RK	48	FEMALE	CA125: 1024.9 U/ml	OVARY	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND GLANDS	HIGH GRADE SEROUS CARCINOMA	-	-	-	-	-
235	863539	71/20	849/20	S	72	MALE	PSA: 3.07 ng/mg	URINARY BLADDER	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS	INFILTRATING UROTHELIAL CARCINOMA	-	-	-	-	POSITIVE
236	882585	73/20	798/20	SK	59	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	NON SMALL CELLS CARCINOMA	-	-	-	-	-
237	819215	80/20	1072/20	JS	36	FEMALE	CEA: 1.93 ng/ml	OVARY	CORE BIOPSY	TUMOR CELLS ARRANGED AS IRREGULAR GLANDS	CARCINOMA	-	-	-	-	POSITIVE
238	877495	81/20	854/20	NK	68	MALE	PSA: 1.16 ng/ml	LUNG	EXCISIONAL	SINGLY SCATTERED CELLS HAVING HYPERCHROMATIC NUCLEI	NON SMALL CELL CARCINOMA	-	-	-	-	POSITIVE
239	892347	85/20	1266/20	HB	66	FEMALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	POSITIVE
240	878956	87/20	455/20	KS	50	MALE	CEA: 121.28 ng/ml	LIVER SOL	EXCISIONAL	SINGLY SCATTERED PLEOMORPHIC TUMOR CELLS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	NEGATIVE
241	889776	88/20	1125/20	DS	70	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS PRESENT IN SHEETS HAVING VESICULAR NUCLEI	CARCINOMA	-	-	-	-	-
242	863804	98/20	14756/19	RC	71	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	CARCINOMA	-	-	-	-	-
243	892723	100/20	1356/20	BS	75	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED AS IRREGULAR GLANDS	SUSPICIOUS OF MALIGNANCY	-	-	-	-	POSITIVE
244	894089	107/20	1521/20	VK	63	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN CORDS, NESTS AND FOCAL GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
245	892522	112/20	1386/20	ST	53	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND IN LEPIDIC PATTERN	ADENOCARCINOMA	-	-	-	-	-
246	884032	119/20	772/20	HK	66	FEMALE	-	ENDOMETRIUM	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND GLANDULAR CONFIGURATION	ENDOMETROID CARCINOMA	-	-	-	-	-
247	891556	120/20	1392/20	MK	54	FEMALE	-	LIVER SOL	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	NEGATIVE
248	895475	122/20	1679/20	AK	58	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND CORDS	CARCINOMA	-	-	-	-	-
249	825481	126/20	1483/20	HS	75	MALE	-	URINARY BLADDER	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS	INFILTRATING UROTHELIAL CARCINOMA	-	-	-	-	POSITIVE
250	898404	132/20	1809/20	SC	65	FEMALE	-	SUPRACLAVICULAR LYMPH NODE	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS ,SHEETS, GLANDS AND FOCAL PAPILLARY CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
251	545608	134/20	2051/20	HS	27	MALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	NEGATIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
226	862142	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-
227	870107	POSITIVE	POSITIVE	NEGATIVE	-	POSITIVE	NEGATIVE	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
228	715808	-	-	-	-	-	-	-	NEGATIVE	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-
229	715808	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-
230	872233	POSITIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	-	-
231	872924	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-
232	755699	POSITIVE	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-
233	877913	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-
234	880055	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	90%	-
235	863539	POSITIVE	-	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-
236	882585	-	-	-	POSITIVE	POSITIVE	-	-	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-
237	819215	POSITIVE	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
238	877495	NEGATIVE	-	-	-	-	-	-	POSITIVE	NEGATIVE	-	-	NEGATIVE	-	-	-	-	-	-	-	-
239	892347	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-
240	878956	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
241	889776	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
242	863804	-	-	-	-	-	-	-	POSITIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
243	892723	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
244	894089	NEGATIVE	POSITIVE	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
245	892522	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
246	884032	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	40.00%	-
247	891556	POSITIVE	-	POSITIVE	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
248	895475	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
249	825481	POSITIVE	NEGATIVE	-	-	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-
250	898404	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	80.00%	-
251	545608	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
226	862142	-	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
227	870107	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
228	715808	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY CLEAR CELL RENAL CELL CARCINOMA	SECONDARY
229	715808	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	CLEAR CELL RENAL CELL CARCINOMA	PRIMARY
230	872233	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
231	872924	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
232	755699	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	UROTHELIAL CARCINOMA	PRIMARY
233	877913	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
234	880055	-	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
235	863539	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	UROTHELIAL CARCINOMA	PRIMARY
236	882585	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
237	819215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	MUCINOUS CARCINOMA	PRIMARY
238	877495	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
239	892347	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
240	878956	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY
241	889776	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
242	863804	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
243	892723	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
244	894089	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
245	892522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
246	884032	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
247	891556	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY
248	895475	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
249	825481	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	UROTHELIAL CARCINOMA	PRIMARY
250	898404	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	NEGATIVE	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
251	545608	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
252	899980	138/20	1840/20	BK	58	FEMALE	-	ABDOMINAL LYMPH NODE	CORE BIOPSY	TUMOR CELLS ARANGED IN GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
253	905385	150/20	2176/20	KD	63	FEMALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND ISLANDS. INDIVIDUAL CELL KERATINIZATION NOTED	SQUAMOUS CELL CARCINOMA-LUNG	-	-	-	-	-
254	904172	160/20	2113/20	AM	65	FEMALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND ATTEMPTED GLAND FORMATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
255	906552	169/20	2367/20	SB	65	FEMALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS ,CORDS AND OCCASIONAL GLANDULAR CONFIGURATION	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
256	910868	185/20	2569/20	MK	65	FEMALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN CORDS AND GLANDULAR PATTERN	ADENOCARCINOMA	-	-	-	-	POSITIVE
257	133342	192/20	2423/20	VK	68	MALE	-	PROSTATE	CORE BIOPSY	BACK BACK ARRANGEMENT OF GLANDS LINED BY SINGLE LAYER OF CELLS	ADENOCARCINOMA	-	-	-	-	-
258	904031	204/20	2130/20	NR	45	FEMALE	-	STOMACH	EXCISIONAL	SINGLY SCATTERED CELLS HAVING HYPERCHROMATIC NUCLEI AND ABUNDANT VACUOLATED CYTOPLASM	SIGNET RING CELL CARCINOMA	-	-	-	-	POSITIVE
259	910627	215/20	2653/20	SK	62	FEMALE	-	CERVIX	INCISIONAL	TUMOR CELLS ARRANGED IN PAPILLARY CONFIGURATION	CARCINOMA	-	-	-	-	-
260	907446	227/20	2505/20	DS	62	MALE	-	OMENTUM	CORE BIOPSY	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
261	918680	238/20	3155/20	SK	59	FEMALE	-	OMENTUM	CORE BIOPSY	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
262	915583	244/20	3143/20	SK	55	MALE	-	LIVER SOL	CORE BIOPSY	CLUSTERS OF TUMOR CELLS EXHIBITING NUCLEOMEGALY	CARCINOMA	-	-	-	-	POSITIVE
263	919995	255/20	3264/20	GK	35	FEMALE	-	COLON	EXCISIONAL	TUMOR CELLS ARRANGED IN FORM OF GLANDS AND NESTS	ADENOCARCINOMS	-	-	-	-	NEGATIVE
264	921026	259/20	3342/20	A	36	FEMALE	-	COLON	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	CARCINOMA	-	-	-	-	NEGATIVE
265	920792	262/20	3327/20	MGD	63	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	CARCINOMA	-	-	-	-	POSITIVE
266	916136	286/20	3001/20	NKB	58	FEMALE	-	OVARY	EXCISIONAL	CYSTS LINED BY TALL COLUMNAR MUCIN SECREATING EPITHELIUM	MUCINOUS CARCINOMA	-	-	-	-	POSITIVE
267	920772	288/20	3330/20	SK	59	FEMALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND OCCASIONAL GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	POSITIVE
268	919071	289/20	3187/20	JK	52	FEMALE	-	OVARY	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS, NESTS AND SINGLY SCATTERED	ADENOCARCINOMA	-	-	-	-	POSITIVE
269	922110	292/20	3447/20	RG	35	FEMALE	-	OVARY	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS, NESTS AND PAPPILARY CONFIGURATION	SEROUS CARCINOMA	-	-	-	-	POSITIVE
270	923251	302/20	3544/20	SD	63	FEMALE	-	OVARY	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDULAR CONFIGURATION	ADENOCARCINOMA	-	-	-	-	POSITIVE
271	922066	303/20	3470/20	D	26	FEMALE	-	OVARY	CORE BIOPSY	TUMOR CELLS ARRANGED IN PAPILLARY CONFIGURATION	SEROUS CARCINOMA	-	-	-	-	POSITIVE
272	923858	306/20	3581/20	SC	62	MALE	-	SUPRACLAVICULAR LYMPH NODE	CORE BIOPSY	TUMOR CELLS PRESENT IN NESTS,SHEETS ANND PAPILLAE	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	-
273	923149	307/20	3559/20	KK	47	FEMALE	-	OMENTUM	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND FOCAL GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
274	924976	325/20	3694/20	RC	50	FEMALE	-	CERVIX	INCISIONAL	HIGH GRADE DYSPLASIA	CARCINOMA INSITU WITH FOCUS OF INVASION	-	-	-	-	-
275	923628	308/20	3558/20	MM	66	MALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	ADENOCARCINOMA	-	-	-	-	POSITIVE
276	924431	341/20	3661/20	RG	53	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN IRREGULAR GLANDS	ADENOCARCINOMA	-	-	-	-	POSITIVE
277	922404	342/20	3507/20	MS	74	MALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	CARCINOMA	-	-	-	-	POSITIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
252	899980	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-
253	905385	-	-	-	-	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
254	904172	NEGATIVE	-	-	-	-	-	-	-	-	POSITIVE	-	-	POSITIVE	-	-	-	-	-	-	-
255	906552	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	NEGATIVE	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
256	910868	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
257	133342	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
258	904031	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
259	910627	-	-	-	POSITIVE	POSITIVE	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-
260	907446	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-
261	918680	POSITIVE	-	POSITIVE	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
262	915583	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	NEGATIVE
263	919995	POSITIVE	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-
264	921026	POSITIVE	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	NEGATIVE	NEGATIVE	-	-	-	-
265	920792	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
266	916136	POSITIVE	-	NEGATIVE	-	-	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
267	920772	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE
268	919071	POSITIVE	-	NEGATIVE	-	-	-	-	NEGATIVE	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
269	922110	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	70%	-
270	923251	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-
271	922066	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	40%	-
272	923858	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
273	923149	POSITIVE	-	-	-	-	-	-	NEGATIVE	-	POSITIVE	NEGATIVE	NEGATIVE	POSITIVE	-	-	-	-	-	12%	-
274	924976	-	-	-	POSITIVE	POSITIVE	-	-	-	-	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-
275	923628	NEGATIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	15%	-
276	924431	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-
277	922404	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
252	899980	-	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
253	905385	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
254	904172	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
255	906552	-	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
256	910868	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
257	133342	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
258	904031	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	SIGNET RING CELL CARCINOMA	PRIMARY
259	910627	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	HPV ASSOCIATED NON KERATINISING SQUAMOUS CELL CARCINOMA	PRIMARY
260	907446	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
261	918680	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
262	915583	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
263	919995	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	ADENOCARCINOMA	PRIMARY
264	921026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	ADENOCARCINOMA	PRIMARY
265	920792	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
266	916136	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	MUCINOUS CARCINOMA	PRIMARY
267	920772	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
268	919071	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	MUCINOUS CARCINOMA	PRIMARY
269	922110	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
270	923251	-	-	POSITIVE	-	-	-	-	POSITIVE	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
271	922066	-	-	POSITIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
272	923858	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
273	923149	-	-	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY SEROUS CARCINOMA OVARY	SECONDARY
274	924976	-	-	-	-	-	-	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	HPV ASSOCIATED NON KERATINISING SQUAMOUS CELL CARCINOMA	PRIMARY
275	923628	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
276	924431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
277	922404	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY

S.NO	MRD NO	IHC NO	SUR.PATH NO.	INITIAL NAME	AGE	SEX	TUMOR MARKERS	SITE OF BIOPSY	TYPE OF BIOPSY	MICROSCOPIC EXAMINATION	PROVISIONAL IMPRESSION	CYTOKERATIN	EMA	LCA	VIMENTIN	CK7
278	926242	346/20	3789/20	AS	60	FEMALE	-	KIDNEY	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	RENAL CELL CARCINOMA	-	POSITIVE	-	NEGATIVE	POSITIVE
279	925304	347/20	3746/20	SG	58	FEMALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND SHEETS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	NEGATIVE
280	925117	350/20	3698/20	S	44	FEMALE	-	SIGMOID COLON	EXCISIONAL	EXTRACELLULAR POOLS OF MUCIN WITH FLOATING SIGNET RING CELLS	MUCINOUS CARCINOMA	-	-	-	-	NEGATIVE
281	925161	351/20	3763/20	RS	69	MALE	-	DUODENUM	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDS	ADENOCARCINOMA	-	-	-	-	POSITIVE
282	925056	353/20	3865/20	RK	55	MALE	-	STOMACH	INCISIONAL	SINGLY SCATTERED SIGNET RING CELLS	SIGNET RING CELL CARCINOMA	-	-	-	-	POSITIVE
283	898596	356/20	3627/20	KK	60	FEMALE	-	OVARY	EXCISIONAL	TUMOR CELLS ARRANGED IN NEST WITH PRESENCE OF PSAMMOMA BODIES	HIGH GRADE SEROUS CARCINOMA	-	-	-	-	POSITIVE
284	924082	362/20	3731/20	SP	48	MALE	-	KIDNEY	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS	RENAL CELL CARCINOMA	-	-	-	-	NEGATIVE
285	927113	365/20	3892/20	NK	66	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	CARCINOMA	-	-	-	-	POSITIVE
286	919379	366/20	3501/20	MP	52	MALE	-	DUODENUM	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	POSITIVE
287	927463	376/20	3987/20	S	55	FEMALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN IRREGULAR GLANDS	CARCINOMA	-	-	-	-	POSITIVE
288	928424	378/20	4022/20	BK	56	MALE	-	PANCREAS	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS	ADENOCARCINOMA	-	-	-	-	POSITIVE
289	436316	379/20	4062/20	RC	73	MALE	-	LIVER SOL	CORE BIOPSY	TUMOR CELLS ARRANGED IN GLANDS AND SHEETS	ADENOCARCINOMA	-	-	-	-	POSITIVE
290	928736	382/20	4115/20	SK	63	MALE	-	LUNG	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS SEPARATED BY FIBROVASCULAR SEPTAE	CARCINOMA	-	-	-	-	-
291	926499	385/20	3857/20	KK	64	MALE	-	DUODENUM	INCISIONAL	TUMOR CELLS ARRANGED IN NESTS,ISLANDS AND GLANDS	ADENOCARCINOMA	-	-	-	-	POSITIVE
292	668150	398/20	4109/20	MS	41	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND GLANDS	CARCINOMA	-	-	-	-	-
293	925811	401/20	3795/20	CM	73	FEMALE	-	ENDOMETRIUM	INCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND GLANDULAR CONFIGURATION	ADENOCARCINOMA	-	-	-	-	POSITIVE
294	929450	409/20	4179/20	LR	67	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS AND SHEETS	CARCINOMA	-	-	-	-	-
295	928095	413/20	4070/20	MA	58	MALE	-	BRAIN SOL	INCISIONAL	TUMOR CELLS ARRANGED IN PAPILLAR,NESTS AND GLANDS	METASTATIC CARCINOMATOUS DEPOSITS	-	-	-	-	POSITIVE
296	923256	426/20	4099/20	SD	65	FEMALE	-	COLON	EXCISIONAL	TUMOR CELLS ARRANGED IN NESTS,SHEETS AND FOCAL GLANDS	CARCINOMA	-	-	-	-	-
297	931075	431/20	4332/20	VP	70	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN NESTS, TRABECULAE AND SHEETS	CARCINOMA	-	-	-	-	-
298	931912	433/20	4373/20	PS	60	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS	CARCINOMA	-	-	-	-	-
299	934368	443/20	4538/20	GR	70	MALE	-	LUNG	CORE BIOPSY	TUMOR CELLS ARRANGED IN SHEETS AND NESTS	CARCINOMA	-	-	-	-	-
300	70999	463/20	3243/20	SD	60	FEMALE	-	STOMACH	EXCISIONAL	TUMOR CELLS ARRANGED IN SHEETS AND FOCAL GLANDULAR CONFIGURATION	CARCINOMA	-	-	-	-	NEGATIVE
301	144436	134/20	2102/20	SK	55	MALE	-	PROSTATE	CORE BIOPSY	BACK TO BACK ARRANGEMENT OF GLANDS	ADENOCARCINOMA	-	-	-	-	-
302	706554	226/20	3992/19	S	34	MALE	-	COLON	EXCISIONAL	TUMOR CELLS ARRANGED IN GLANDS	ADENOCARCINOMA	-	-	-	-	NEGATIVE

S.NO	MRD NO	CK20	CEA	CDX-2	CK5/6	P63	UROPLAKIN-II	NSE	TTF-1	CALRETININ	PAX 8	NAPSIN A	p40	WT-1	MAMMAGLOBIN	CHROMOGRANIN	SYNAPTOPHYSIN	PSA	CD-117	MIB-1	HEPPAR-1
278	926242	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-
279	925304	POSITIVE	-	POSITIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
280	925117	POSITIVE	POSITIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
281	925161	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
282	925056	NEGATIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
283	898596	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	-
284	924082	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
285	927113	NEGATIVE	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
286	919379	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-
287	927463	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	NEGATIVE
288	928424	NEGATIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
289	436316	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	NEGATIVE	-	NEGATIVE	NEGATIVE	-	-	-	-	-	-	-	-	-
290	928736	-	-	-	-	-	-	-	NEGATIVE	-	-	POSITIVE	-	-	NEGATIVE	NEGATIVE	-	-	-	-	-
291	926499	POSITIVE	POSITIVE	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
292	668150	-	-	-	-	-	-	-	POSITIVE	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-
293	925811	-	-	-	-	NEGATIVE	-	-	-	-	-	NEGATIVE	-	NEGATIVE	-	-	-	-	-	-	-
294	929450	-	-	-	-	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
295	928095	NEGATIVE	-	NEGATIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-
296	923256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
297	931075	-	-	-	-	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
298	931912	-	-	-	-	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
299	934368	-	-	-	-	-	-	-	NEGATIVE	-	-	-	POSITIVE	-	-	-	-	-	-	-	-
300	70999	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-
301	144436	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
302	706554	POSITIVE	-	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	NEGATIVE	NEGATIVE	-	-	-	-

S.NO	MRD NO	HMWCK	AMACR	ER	CD10	DESMIN	CD15	CD34	p16	RCC	p53	b CATENINE	HER-2-NEU	GLYPICAN 3	GATA3	SATB2	ARGINASE 1	FINAL IMPRESSION	PRIMARY/ SECONDARY
278	926242	NEGATIVE	POSITIVE	-	NEGATIVE	-	-	-	-	NEGATIVE	-	-	-	-	-	-	-	CHROMOPHOBE RENAL CELL CARCINOMA	PRIMARY
279	925304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY COLORECTAL IN ORIGIN	SECONDARY
280	925117	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	SIGNET RING CELL CARCINOMA	PRIMARY
281	925161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
282	925056	-	-	-	-	-	-	-	-	-	-	-	2+	-	-	-	-	SIGNET RING CELL CARCINOMA	PRIMARY
283	898596	-	-	-	-	-	-	-	-	-	POSITIVE	-	-	-	-	-	-	HIGH GRADE SEROUS CARCINOMA	PRIMARY
284	924082	-	POSITIVE	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	CLEAR CELL RENAL CELL CARCINOMA	PRIMARY
285	927113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
286	919379	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
287	927463	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
288	928424	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	DUCTAL ADENOCARCINOMA	PRIMARY
289	436316	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
290	928736	-	-	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	METASTATIC CARCINOMATOUS DEPOSITS LIKELY CLEAR CELL RENAL CELL CARCINOMA	SECONDARY
291	926499	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY UPPER GI/PANCREATICOBILIARY	SECONDARY
292	668150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
293	925811	-	-	POSITIVE	-	-	-	-	POSITIVE	-	-	-	-	-	-	-	-	ENDOMETROID ADENOCARCINOMA	PRIMARY
294	929450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
295	928095	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	METASTATIC ADENOCARCINOMATOUS DEPOSITS LIKELY FROM LUNG	SECONDARY
296	923256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	ADENOCARCINOMA	PRIMARY
297	931075	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
298	931912	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
299	934368	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SQUAMOUS CELL CARCINOMA	PRIMARY
300	70999	-	-	-	-	-	-	-	-	-	-	-	2+	-	-	-	-	ADENOCARCINOMA	PRIMARY
301	144436	NEGATIVE	POSITIVE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ADENOCARCINOMA	PRIMARY
302	706554	-	-	-	-	-	-	-	-	-	-	-	-	-	-	POSITIVE	-	ADENOCARCINOMA	PRIMARY

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No. BFUHS/2K19p-TH/ 1-٩٤٩

Date ٩/٩/١٩

The Principal,
DMC, Ludhiana.

Subject: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 29.05.2019 has approved the plan of thesis of **Shefali Mehmi**, a student of your college for **MD Pathology** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis

Immunohistochemical profile of epithelial tumors in a tertiary care hospital

Supervisor
Dr. Neena Sood
Prof. & Head,
Dept. of Pathology,
DMCH, Ludhiana.

Co-Supervisor
Dr. Harpreet Kaur
Prof.,
Dept. of Pathology,
DMCH, Ludhiana.

The student has to submit the four copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

SP Singh

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

1. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*
2. *The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.*

IMMUNOHISTOCHEMICAL PROFILE OF EPITHELIAL TUMORS IN A TERTIARY CARE HOSPITAL

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

Doctor of Medicine

In

PATHOLOGY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

AUGUST, 2018

DR. SHEFALI MEHMI

DEPARTMENT OF PATHOLOGY

DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

LUDHIANA, PUNJAB-141001

ABSTRACT OF PLAN OF THESIS

Title	IMMUNOHISTOCHEMICAL PROFILE OF EPITHELIAL TUMORS IN A TERTIARY CARE HOSPITAL
For the degree of	M.D. Pathology
Name of the candidate	Dr. Shefali Mehmi
Supervisor	Dr. Neena Sood, Professor & Head ,Department of Pathology, DMCH, Ludhiana
Co-supervisor	Dr. Harpreet Kaur, Professor, Department of Pathology, DMCH, Ludhiana
Institution	Dayanand Medical College and Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction:

IHC is a widely used technique in diagnosistics and research and its application continue to extend because of its ease to use, reliability and versatility. Advantage of this is visible morphology of tissue around the specifc antigen by counter staining.

Aim of study: To study IHC profile of various epithelial tumors of the body and metastatic carcinoma of unknown primary site.

Materials and methods: Preparation of paraffin section will be done followed by antigen retrieval procedure and addition of primary antibody then followed by application of ultra vision one HRP polymer. Slides will be mounted with DPX and observed under light microscope.

Clinical significance: Used for definitive diagnosis of the epithelial tumors

Keywords: Immunohistochemistry, Epithelial tumors, Cytokeratins, Metastasis

(Signature)	(Signature)	(Signature)	(Signature)
Candidate	Co-supervisor	Supervisor	Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"IMMUNOHISTOCHEMICAL PROFILE OF EPITHELIAL TUMORS IN A TERTIARY CARE HOSPITAL"** exist in the Department of Pathology at Dayanand Medical College and Hospital, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis is genuine and is collected by the candidate herself under our supervision and guidance.

Supervisor

Dr. Neena Sood
Professor & Head
Department of Pathology
DMCH, Ludhiana

Co-Supervisor

Dr. Harpreet Kaur
Professor
Department of Pathology
DMCH, Ludhiana

Head of Department

Dr. Neena Sood
Professor & Head
Department of Pathology
DMCH, Ludhiana

Place: DMCH

Date: 15/12/18

APPROVAL PROFORMA
BY
RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	Dr. Shefali Mehmi
Department	Pathology
Topic of Thesis	IMMUNOHISTOCHEMICAL PROFILE OF EPITHELIAL TUMORS IN TERTIARY CARE CENTRE
Likely date of appearing in PG examination	MAY-JUNE 2021
Date of enrollment	MAY 10, 2018
Name of Head of Department	Dr. Neena Sood
1) Supervisor **2) Co-Supervisor**	Dr. Neena Sood Dr. Harpreet Kaur
Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
1. HOD Pharmacology	1. HOD Physiology
2. HOD Surgery	2. HOD Pathology
3. HOD Pathology	3. HOD Pharmacology
4. HOD Medicine	4. HOD SPM
5. Dean Academics	5. HOD Medicine
6. Vice Principal	6. HOD Surgery
	7. HOD Obst. & Gynae
	8. Legal Expert
	9. Secretary, IEC
	10. Dean Academics
	11. Vice Principal
	12. Principal

Approved: Yes / No

Chairperson
Research Committee
Chairperson
Research Committee

Approved: Yes / No

Chairperson
Ethics Committee
Chairperson
Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	Dr.Shefali Mehmi House no. 37/90 B, Paramjit ganj Kapurthala Punjab
2	NAME OF THE INSTITUTE	Dayanand Medical College & Hospital, Ludhiana
3	COURSE OF STUDY AND SUBJECT	MD PATHOLOGY
4	DATE OF ADMISSION OF COURSE	10th MAY,2018
5	TITLE OF THE TOPIC	IMMUNOHISTOCHEMICAL PROFILE OF EPITHELIAL TUMORS IN TERTIARY CARE CENTRE

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Immunohistochemistry (IHC) technique is widely used in diagnostics and research, and its applications continue to be extended because of its ease of use, reliability and versatility. The advantage of IHC over immunofluorescence techniques is the visible morphology of the tissue around the specific antigen by counterstaining, e.g., with hematoxylin (blue). Results of stained IHC markers are reported semi quantitatively and have important diagnostic and prognostic implications, particularly for epithelial tumors, lymphoma, and the detection of infectious microorganisms. Nowadays IHC is a routine and essential tool in diagnostic and research laboratories, and is used in a wide range of applications

Immunohistochemistry is carried out by exploiting the principle that antibodies bind specifically to an antigen in biological tissues. The antigen-antibody interactions can be visualized by a marker including fluorescent dyes, enzyme-substrate color reactions, radioactive elements or colloidal gold. With progress in biotechnology, researchers have been making significant improvements in protein conjugation, tissue fixation methods, detection labels and microscopy.

The impact of diagnostic immunohistochemistry for surgical pathologist is legendry, and it is best appreciated in studying malignancies of unknown primary sites.[1] This study is to be done to determine the immunohistochemistry of metastatic carcinoma of unknown primary site and to determine the site of origin and in predicting the outcomes of various epithelial tumors in the body.[1] There are a number of factors that play a

strong role in predicting the origin of a metastatic malignancy. History of malignancy, patient sex, any history of smoking, family history, site of disease presentation, and radiographic findings are but a few of the factors that can strongly predict the primary site of malignancy before and IHC is performed. Approximately 3% to 5% of new malignant diagnoses are classified as Carcinoma of unknown primary site(CUP). As such, CUP ranks among the 10 most prevalent forms of cancer in both males and females.[2] The most common sites of involvement include lymph nodes, liver, bones, and lungs.[3] The percentages of deaths from non-squamous and non-endocrine carcinomas by sites of origin are approximately as follows: for men, lung (28%), colon (14%), prostate (14%), pancreas (11%), liver (hepatocellular carcinoma and cholangiocarcinoma) (10%), bladder (6%), esophagus (6%), and kidney (5%); for women, lung (28%), breast (22%), colon (13%), pancreas (11%), ovary (8%), uterus (6%) and liver (hepatocellular carcinoma and cholangiocarcinoma (5%). All other carcinomas represent less than 5% of adenocarcinoma-related deaths for patients. Thus even relatively sensitive and specific IHC markers for those sites may have difficulty predicting prospectively the site of origin of a metastasis.[4] It is very important for the plane of management and prognostication, and it also provides further insights into the pathogenesis of these tumors. So, this study was undertaken to determine the role and significance of IHC for accurate diagnosis and subtyping of undifferentiated carcinomas as it is essential in guiding therapy and prognosis..[5]

6.2 REVIEW OF LITERATURE

Immunohistochemistry (IHC) is a powerful method for localizing specific antigens in formalin-fixed, paraffin-embedded (FFPE) tissues based on antigen–antibody interaction.[6]

The recognition of epithelial differentiation in well or moderately differentiated carcinomas does not pose significant diagnostic difficulty on routine histologic preparations since evidence of such differentiation (eg, keratinzation or glandular formation) is usually apparent. In those instances in which the neoplasm shows little or no evidence of epithelial differentiation, immunohistochemical studies using a variety of broad-spectrum epithelial markers are often necessary to either confirm or rule out the epithelial nature of the tumor. Broad-spectrum epithelial markers is the term used to refer to those markers that are frequently expressed in a wide range of epithelial tumors. In the initial evaluation of a poorly differentiated tumor in surgical pathology, these markers are employed as part of the screening panel used in the recognition of the major lineages (ie, epithelial, mesenchymal, lymphoid, and melanocytic).[7]

In this study the main emphasis will be on immunohistochemical markers for the diagnosis of epithelial tumors which mainly includes cytokeratins using formalin fixed paraffin embedded tissues and their positivity in various epithelial tumors.

The keratins are the typical intermediate filament proteins of epithelia, showing an outstanding degree of molecular diversity. As part of the epithelial cytoskeleton, keratins are important for the mechanical stability and integrity of epithelial cells and tissues. Furthermore, since keratins also exhibit

characteristic expression patterns in human tumors, several of them (notably K5, K7, K8/K18, K19, and K20) have great importance in immunohistochemical tumor diagnosis of carcinomas

CK 7 a 54 kD type II simple keratin that has restricted distribution compared with keratin 8 and 18. It is positive in simple, pseudostratified and ductal epithelium and mesothelium.[7]

CK 20 is 46 kD low molecular weight keratin. Tissue distribution is limited predominantly to GIT epithelium, tumors of mucinous origin of ovary , Meckel cell neoplasm, colorectal, gall bladder carcinomas.[7]

CK5/6 are basic polypeptides with molecular weight of 58kD, almost all squamous cell carcinomas, half of transitional cells carcinomas and many undifferentiated large cell carcinomas immunostain with CK5/6. It has excellent sensitivity and specificity for the detection of squamous differentiation in poorly differentiated carcinoma.[7]

Thyroid transcription factor 1 (TTF-1) a nuclear tissue specific protein transcription factor, is found only in thyroid and thyroid tumors regardless of histological type. It is also found in lung carcinomas including adenocarcinomas (75%), non small cell lung carcinoma(63%),small cell lung carcinoma(90%), and rare squamous cell carcinoma.[7] One potential diagnostic pitfall in the interpretation of TTF-1 immunohistochemistry is the relatively common occurrence of cytoplasmic staining, which is found in a number of different tumor types and is generally considered nonspecific.[8]

Epithelial membrane antigen (EMA) encoded by MUC 1 gene on chromosome 1 and a derivative of human antigen. EMA is transmembrane glycoprotein and its expression is increased in carcinomas. The utility of EMA

antibody is in detection of epithelial differentiation as supplement to cytokeratin.[9]

Synaptophysin a glycoprotein, is an integral part of neuroendocrine secretory granule membrane and it is recognized by monoclonal antibody in a variety of neuroendocrine tumors. It is a broad spectrum neuroendocrine marker.[10]

p63 molecule is a member of p53 family of proteins. It exists as multiple protein variants which are result of alternate splicing events. The p63 protein is expreseed in a nuclear pattern in various myoepithelial and is present in basal layer of squamous epithelium.[11]

Main diagnostic use is in Squamous cell carcinoma, basal (myoepithelial) cell marker in prostatic and mammary glands. Its expression is restricted to epithelial cells of stratified epithelia, such as skin, esophagus, ectoocervix, tonsil, and bladder, and to certain subpopulations of basal cells in glandular structures of prostate and breast, as well as in bronchi. Consistent with the phenotype observed in normal tissues, it was found that p63 is expressed predominantly in basal cell and squamous cell carcinomas, as well as transitional cell carcinomas, but not in adenocarcinomas, including those of breast and prostate. Interestingly, thymomas expressed high levels of p63.[12]

Wilms tumor 1 protein (WT1) is expressed at high levels in kidney glomeruli, gonadal ridge of developing gonads, Sertoli cells of testis and both epithelial and granulosa cells of ovary, which suggest a developmental role.WT1 has nuclear expression and is seen in wilms tumor.[3] Among carcinomas, WT1 is relatively specific for ovarian serous tumors, although occasional primary

carcinomas from other sites are also positive. Cytoplasmic WT1 staining is detected in a subset of other carcinomas and other neoplasms.[13]

E- Cadherins are trans membrane intercellular adhesion molecule that are divide into three subclasses- E-, P-,N-cadherin. These molecules have subclass specificities in cell-cell binding and are involved in selective cell adhesion. E-cadherin is typically associated with epithelial differentiation.[14]

Carcinoembryonic antigen (CEA; CD66e) Carcinoembryonic antigen (CEA) is a cell surface glycoprotein normally expressed by colonic mucosa of fetal colon and to a lesser degree in adult colonic mucosa. Prostatic carcinoma, endometrioid carcinoma, renal cell carcinoma, ovarian serous tumors, adrenal tumors, and follicular and papillary thyroid carcinoma in addition to mesothelioma are constantly CEA negative.[9]

Napsin A is a proteinase involved in maturation of surfactant protein B and has been shown to be positive in more than 80% of lung adenocarcinoma ,with a higher specificity than TTF-1.Thus cytoplasmic positivity of Napsin-A can be supportive evidence of adenocarcinoma lung, and it is particularly helpful in cases with equivocal TTF-1 staining.[9]

Neuron specific enolase (NSE) enolase enzymes comprise five different forms. NSE is found in a variety of normal and neoplastic neuroendocrine cells and predominates in brain. It is originally believed to be a specific marker for neuroendocrine differentiation.[15]

p 16 a tumor suppressor protein that is a cyclin dependent kinase inhibitor, p16 is essential in regulating the cell cycle and it inactivates cyclin dependent kinases that phosphorylate retinoblastoma (Rb). Therefore it can decelerate cell cycle. Its overexpression is surrogate biomarker of HPV infections.[16]

p 40 a relatively new marker for identification of squamous cell carcinoma. It recognizes a p63 isoform. The advantage of p40 is that it appears to be as sensitive as p63 but shows superior specificity.[9]

Paired-box gene 8 (PAX8) encodes a transcription factor associated with important roles in embryogenesis and disease, and is a member of the PAX gene family. PAX8 has been demonstrated to be crucial in determining cell fate during the development of the thyroid, kidney, brain, eyes and Müllerian system and regulates expression of the Wilms tumor tumor suppressor gene (WT1).[17]

Uroplakin-II The asymmetric unit membrane that is unique to the umbrella cells of urinary tract transitional epithelium contains a transmembrane protein that is unique to urothelium. In studies performed uroplakins are highly specific for transitional epithelium, with moderate sensitivity, and are not seen in squamous cell carcinomas.[7]

Metastatic carcinoma of unknown primary site Carcinomas of unknown primary (CUPs), are those carcinomas for which clinical, radiographic and pathologic evidence of a primary site of origin are lacking.[7] The percentage of carcinomas falling into such a category remains unclear. Every case of metastatic carcinoma caries with it some pretest probability for a primary site of origin. For example, a poorly differentiated carcinoma in a cervical lymph node from a man has no chance of being metastatic uterine carcinoma.[16]

Among the tools available to pathologists in approaching these lesions, immunohistochemistry is a reliable, inexpensive, and widely available resource.[16] The main emphasis will be on most useful markers with a

particular focus on the utility of lineage-restricted transcription factors, including CDX2, PAX8 and TTF-1.[18]

Overall, patients with CUP have a poor prognosis, with median survival times of between 8 and 11 months. A review of 12 autopsy series in patients with CUP showed that a primary site was identified at autopsy in 73% of cases. The most common sites of origin included pancreaticobiliary tract, lung, and kidney.[19] Clinically, approximately 15% of CUP cases can be classified into categories that predict primary site, these patients have improved outcomes compared with the 85% of patients in whom no primary site can be presumed and therefore no site-specific treatment can be offered.[20] A wide array of new immunohistochemical markers has emerged in the last decade, most notably antibodies directed against lineage-specific transcription factors, which have improved specificity for primary site determination compared with antibodies that recognize keratins and other cytoplasmic and membranous antigens.[18]

In the study done by Mouhamed et al., a panel of markers used to detect the primary site of the tumor in twenty cases of undifferentiated ovarian carcinoma was done. The majority of marker combinations had high specificity and sensitivity for diagnosing metastatic carcinomas, especially those originating in breast, colon, and malignant mesothelioma. The designed combinations of immunostaining profiles are helpful in the diagnosis of tissue origin of metastatic adenocarcinomas and could offer a fast and correct prediction of the primary site. In the present study the expression patterns of panCKA1/A3, CK7, CK20, vimentin, EMA, calertinin, inhibin-A, PAX8 were sufficient for classification in most cases, whereas expression of CA125 and CEA may help in supporting the diagnosis.

So, in the twenty studied cases, 2 cases were malignant mesothelioma (calretinin +, panCKA1/A3 +, CK7 +, EMA +, vimentin +, CK20 -, CK125 -, CEA -, inhibin -, PAX8 -). Two other cases were granulosa cell tumor (inhibin +, calertinin +, vimentin +, panCKA1/A3 -, CK7 -, EMA -, CK20 -, CK125 -, CEA -, PAX8 -). Sixteen cases were undifferentiated ovarian carcinoma (PAX8 +, vimentin +, panCKA1/A3 +, CK7 +, EMA +, CK125 -/+, CEA-/+, calretinin -, inhibin -, PAX8 -). A panel approach which is composed of carefully selected antibodies is always recommended the antigenic profile of positive as well as negative markers will help in the characterization of the tumor.[5]

6.3 AIMS AND OBJECTIVES OF THE STUDY

1. To study immunohistochemical profile of various epithelial tumors of the body.
2. To study the IHC profile of Metastatic carcinoma of unknown primary site.

7.0 MATERIAL AND METHODS

7.1 SOURCE OF DATA

This study will be conducted on all cases received in the Department of Pathology, where IHC has been done for tumors of epithelial origin.

7.2METHOD OF COLLECTION OF DATA

Inclusion criteria:

All epithelial tumors of various organs undergoing immunohistochemistry for definite categorisation.

Exclusion criteria:

1) All sarcomas and lymphomas.

2) Prognostic markers done on Carcinoma breast.

3) All IHC proven neuroendocrine tumors.

Methodology:

IHC will be done on blocks made in histopathology lab after which section is cut 2-3 micron thick and is put on poly L lysine coated slide and is incubated at 60 degree Celsius for 30 minutes. Adjust the temperature at 37 degree Celsius and leave overnight. Next step is preparation of TRIS buffer saline (0.75M) and CITRATE buffer saline. All buffers are prepared fresh and not reused. Dewaxing of paraffin sections is done by heating with spirit lamp. Antigen retrieval procedure is done using citrate and tris buffer. Addition of primary antibody is done by covering whole tissue and incubating at room temperature. Clean the slide with tissue paper and apply ultra vision one HRP polymer covering whole tissue and incubate for 45 minutes at room temperature. Final step is apply one drop of substrate DAB solution on each slide covering the whole material and incubate for 10-15 minutes depending

upon desire stain intensity. Wash the slide, allow them to dry and incubate for 2 minutes and then mount with DPX. These mounted slides are observed under light microcope.

Duration of study:

The will be two and half year study, conducted one year retrospective from January 2018 to December 2018 and one and half year prospective between January 2019 to June 2020.

Study Design: This is prospective and retrospective study.

OUTCOME:

The results will be analyzed according to the protocol.

STATISTICAL ANALYSIS:

Data will be described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. All statistical calculations will be done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEF?

No.

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Attached herewith

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PROFORMA

Serial No.

IHC no. Surgical path no.

Name Age Sex

MRD Date

Address Phone no.

Routine investigation (including radiology)

Site of biopsy

Type of biopsy Excisional Incisional Core biopsy

Gross examination

Microscopic examination

Signature of candidate **Signature of supervisor**

Name of the IHC markers	Nuclear	Cytoplasmic	Membrane	Intensity			Distribution	
				1+	2+	3+	Diffuse	Focal
Cytokeratin								
EMA								
LCA								
Vimentin								
CK 7								
CK 20								
CEA								
CDX-2								
CK 5/6								
P63								
Uroplakin-II								
S-100								
NSE								
TTF-1								
Calretinin								
PAX 8								
Napsin A								
p 40								
WT-1								
Mammaglobin								
CK 8/18								
Chromogranin								
Synaptophysin								
PSA								
CD-117								
HMB-45								
MIB-1								
Heppar-1								
HMWCK								
AMACR								
CD-99								
Tdt								
CD68								
Others								
Others								

Final impression:

Signature of candidate

Signature of supervisor